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Bay Area's Computer Magazine
JUNE 12, 1989 • 57

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Regis McKenna On Markets And Opportunities

Venture Capitalist Survey

Informal Investment Networks

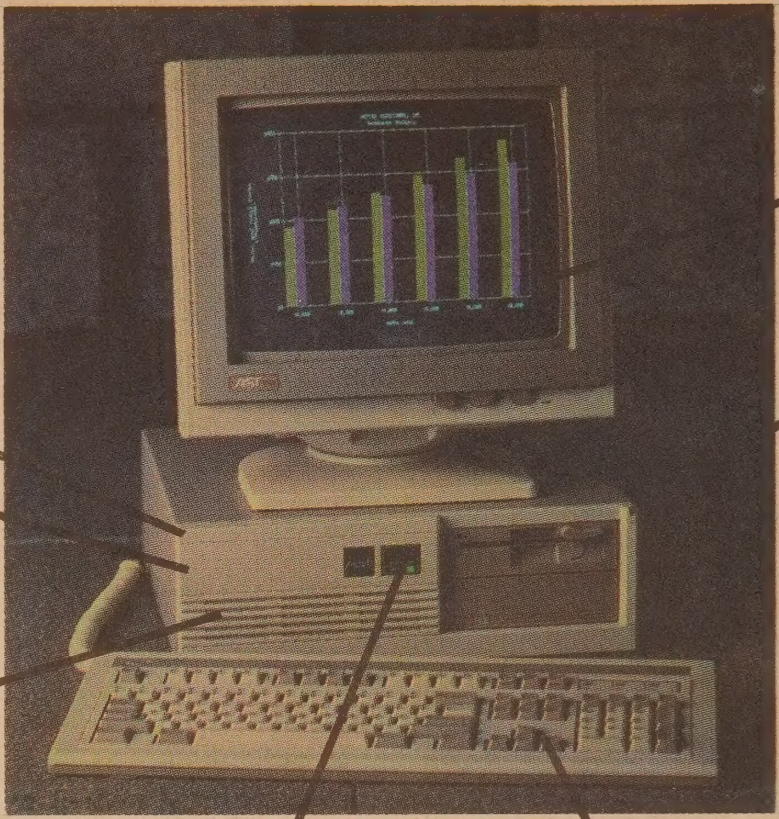
PR: Who Needs It?

REVIEWS:

Claris CAD • Toshiba T1000 Laptop
Professional Draw

FRANK CAUFIELD
OF KLEINER PERKINS
CAUFIELD & BYERS

Bravo!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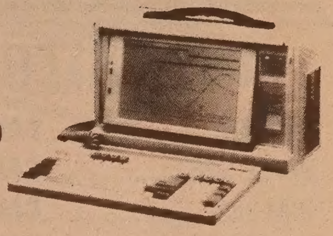

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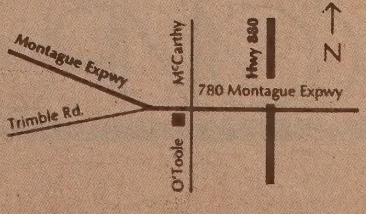

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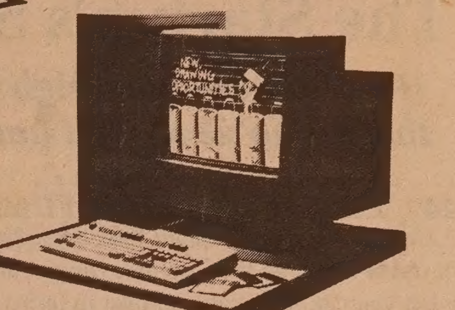

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JUNE 12, 1989 MICROTIMES ISSUE #57

The Startup's Survival Kit

How to succeed in high tech, according to those who've done it and made it happen.

44 PR: Not Just For Big Firms?

A Guest Editorial by Robert Kay, a San Francisco publicist specializing in travel and high tech, on assessing your needs for public relations and what you can reasonably expect in terms of performance.

46 VC: The Inside Story

By Dennis Erokan and Mary Eisenhart

Venture capitalist Frank Caufield, whose firm was instrumental in such startups as Sun, Compaq, and Lotus, discusses the rewards and pitfalls of the VC business and its role in driving innovation.

70 Venture Capital: A Survey

We polled some California-based venture capitalists on their specialities and investment criteria, as well as the proper approach for fledgling entrepreneurs to seek funding. Also, we include a resource list of products and a discussion of informal investment networks, an increasingly popular alternative to conventional venture capital funding.

82 Regis McKenna On The Post-IBM World

By Mary Eisenhart

Marketing wizard, industry observer extraordinaire, and general high-tech mover and shaker Regis McKenna on changing—and increasingly diverse—market opportunities and why they're happening.

COVER AND CONTENTS PHOTOS: JIM MARSHALL

REVIEWS

96 The Toshiba T1000: An Old Favorite Revisited

By Ed Kahn

Toshiba's low-cost workhorse continues to enjoy huge popularity, helped by a series of up-to-the-minute add-ons.

108 Professional Draw

By Sue Albert

A companion product to *Professional Page*, this package lets you create quality color graphic output on the Amiga.

112 Project Scheduler 4

By Woody Liswood

A *Windows*-like project manager that's efficient, clear, and easy to use.

120 Great Games

A Collection For People Who Take Their Fun Seriously

By Tom Cox

Commercial and public domain favorites for the committed gamer.

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42 Realizable Fantasies

By Jim Warren

The abysmal quality of public education threatens the industry's well-being.

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By John C. Dvorak

From Dvorak's readers, nearly every possible interpretation of the letters "IBM."

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By enhancing and expanding *MacDraw*, Claris has created an accessible, flexible drafting package with a multitude of features.

140 BMUG *By David Morgenstern*
Reports from recent Mac shows, plus advice for owners of the LaserWriter IISC.

144 HyperCard *By Birrell Walsh*
Enduring favorite products.

148 Macintosh Buyers Guide

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By Bennett Falk

NeWS, the windowing interface created by Sun that's moving onto other platforms, including the Mac.

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By Wayne A. Yacco

The first edition of this new column offers an introduction to LAN equipment and terminology.

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By Matthew Leeds

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160 Atari ST

By David Hawkins

Signum, a sophisticated document preparation program.

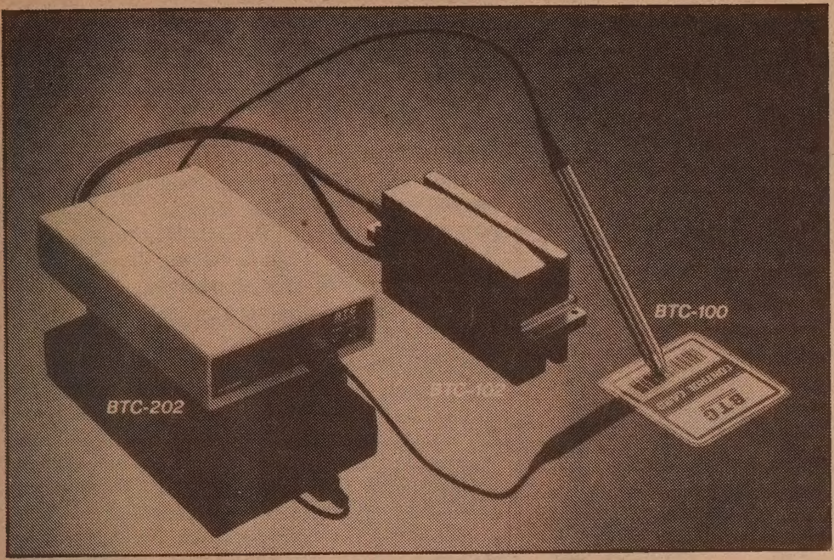
162 Apple II

By Mike Markowitz

Battery woes for IIGS owners.

Correction: In last month's review of the Complete FAX/9600 board by Woody Liswood, we inadvertently omitted the contact information for the vendor. The board in question is available from The Complete PC, Inc., 521 Cottonwood Drive, Milpitas, CA 95035, (408) 434 - 0145.

THE BEST CHOICE



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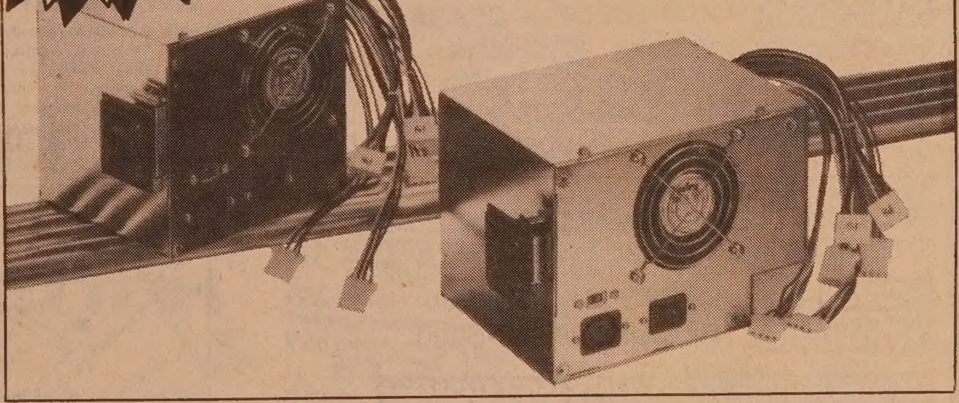

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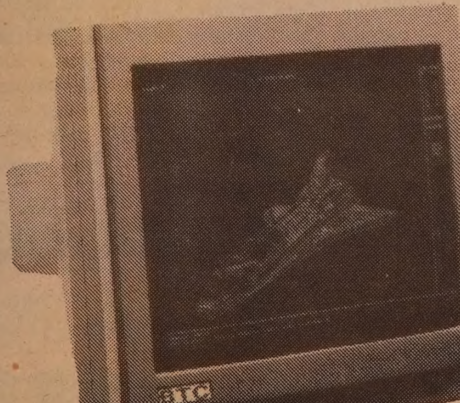

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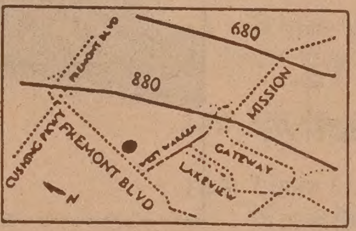

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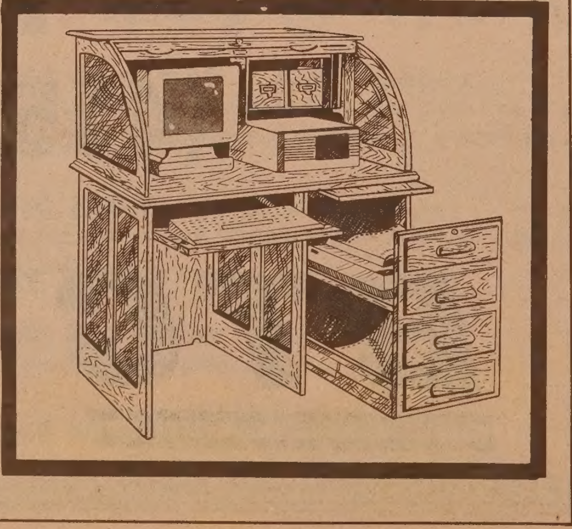

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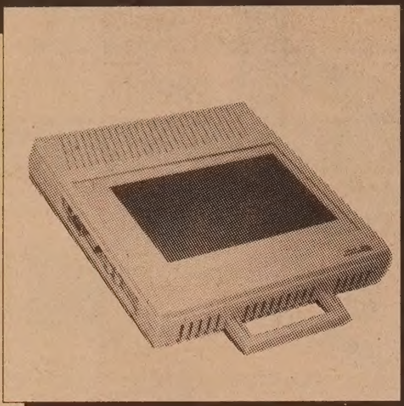

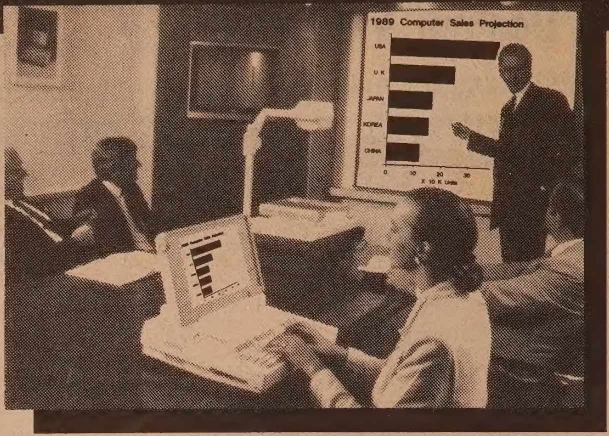

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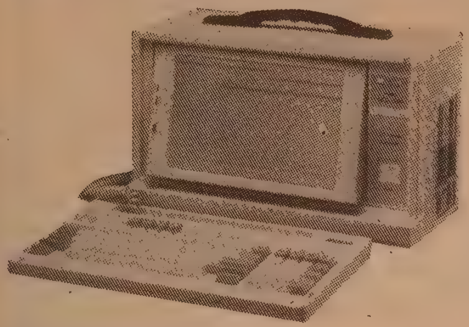

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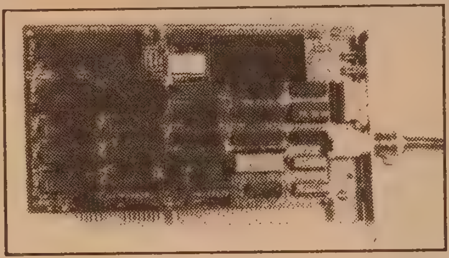

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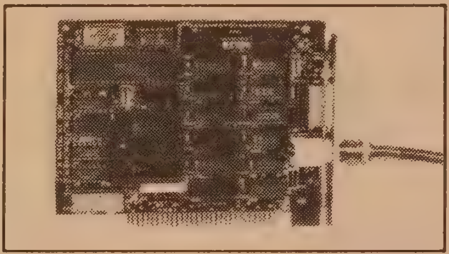

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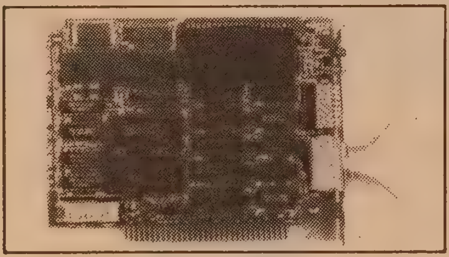

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June 18–22 NETRON/CAP Development Center Users' Conference. Toronto. Netron, Inc. Call: Bill Daverne, (415)636-8333.

June 19–20 Time Line 3.0 Workshop. San Francisco. Symantec. Call: (415)898-1919.

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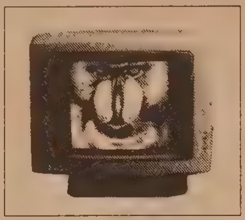

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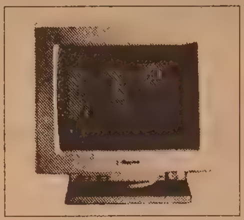

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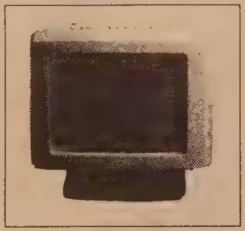

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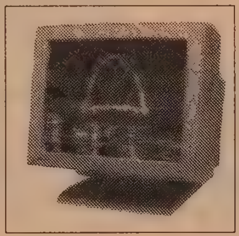

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CALENDAR OF EVENTS *continued*

June 19–20 Time Line 3.0 Workshop. San Francisco. Symantec. Call: (415)898-1919.

June 19 PageMaker Part 1 Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 20–23 C Programming Hands-on Workshop. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800- 421-8166.

June 20–23 Am29000 RISCμP Embedded System Programming Class. Sunnyvale. Advanced Micro Devices. Call: (408)749–2325.

June 20 Microsoft Word Part 2 Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 20 Introduction To Microsoft Excel Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 20–23 Introduction To Fiber Optic Communications Course. San Francisco. Integrated Computer Systems. Call: 1-800- 421-8166.

June 20 OOP SIG Meeting. Palo Alto. Software Entrepreneurs' Forum. Call: (415)854-7219.

June 20–23 Computer Aided Design And Drafting—Level II Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

June 21–24 Independent Computer Consultants Association's Annual Conference. San Diego. ICCA. Call: 1-800- GET-ICCA.

June 21 HyperCard Part 2 Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 21 MDTA Meeting: Adam Osborne Speaks. Walnut Creek. Mount Diablo Technology Association. Call: (415)932-4828.

June 22 PageMaker Part 2 Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 22 Marketing SIG Meeting. Palo Alto. Software Entrepreneurs' Forum. Call: (415)854-7219.

June 23 Basic Macintosh Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 23 System Manager: Using The Operating System. Oakland. DataNet. Call: (415)465-9084.

June 24 Word Processing Using WordStar Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

June 25 San Francisco Computer Show, Sale, And Swap. Fort Mason Center. Compu-Shows. Call: (415)931-0423.

June 25 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

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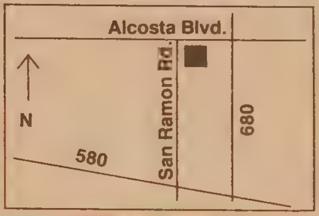

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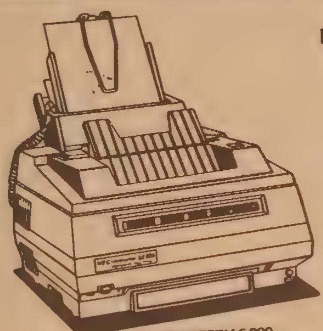

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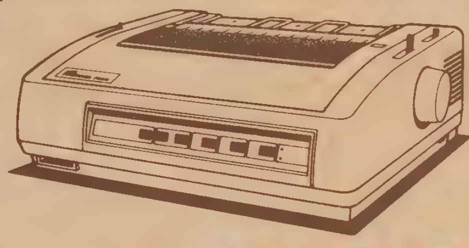

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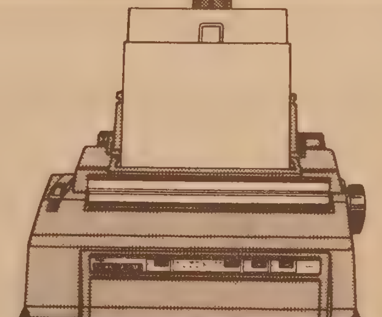

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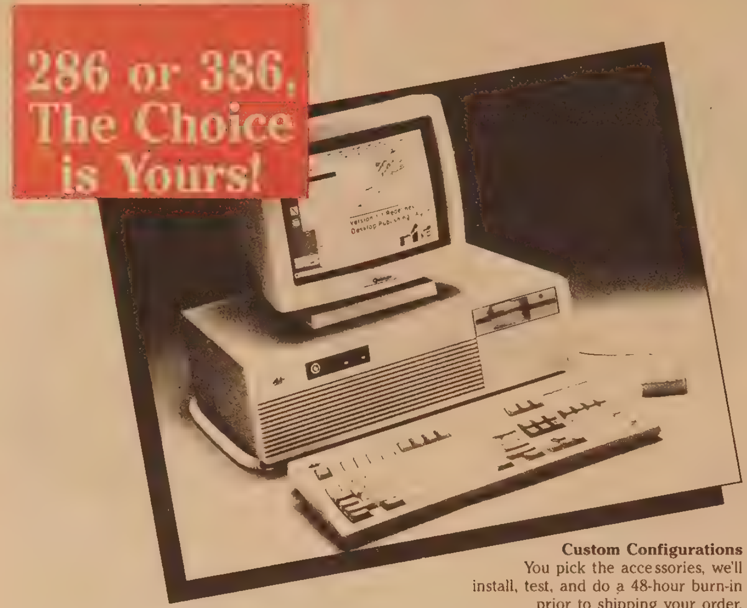

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286/16	**MGA**	**EGA**	**VGA**
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80MB	$1,895	$2,245	$2,495
286/20	**MGA**	**EGA**	**VGA**
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80MB	$1,995	$2,345	$2,595
120MB RLL	$2,195	$2,545	$2,795
286/25	**MGA**	**EGA**	**VGA**
40MB	$1,895	$2,245	$2,495
80MB	$2,095	$2,445	$2,695
120MB RLL	$2,295	$2,645	$2,895

'386 Monitor and Hard Drive Options

386/16	MGA	EGA	VGA
40MB	$2,195	$2,545	$2,795
80MB	$2,395	$2,745	$2,995
120MB RLL	$2,595	$2,945	$3,195
386/20	**MGA**	**EGA**	**VGA**
40MB	$2,345	$2,695	$2,945
80MB	$2,545	$2,895	$3,145
150MB ESDII	$3,345	$3,695	$3,945
386/25	**MGA**	**EGA**	**VGA**
40MB	$3,495	$3,845	$4,095
80MB	$3,695	$4,045	$4,295
150MB ESDI	$4,495	$4,845	$5,095
320MB ESDI	$5,295	$5,645	$5,895
386/33	**MGA**	**EGA**	**VGA**
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150MB ESDI	$5,495	$5,845	$6,095
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June 25–28 Xhibition '89. San Jose. Integrated Computer Solutions. Call: (415)388-3777.

June 26 PageMaker Part 2 Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 26–27 Annual Western Regional Show. San Jose. Sun User Group. Call: (415)336-4112.

June 26 System Admin Changes For SunOS 4.0X. Sun Microsystems. Call: 1-800- 423-8020.

June 27 Automating Your Accounting System With Solomon—See What It Can Do For Your Business! San Francisco. J.C. Lukrich. Call: (415)864-6770.

June 27 Learning About Your Mac System And Hard Disk Seminar. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 27–29 Multi-Media And Hyper-Media Expo. San Francisco. American Expositions. Call: (212)226-4141.

June 28 HyperCard Part 3 Class. Fort Mason Bldg. D, San Francisco. Computer Alliance. Call: (415)771-1671.

June 30 Quick Start Ventura Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

July 1–2 Symbolics Workshop. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 1 LAN Essentials: Installation & Configuration Class. Oakland. DataNet. Call: (415)465-9084.

July 2 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

July 8 Techniques Of Presentation Design. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 8 De Anza Computer Mart. Cupertino. De Anza College. Call: (408)996-4350.

July 8 System Manager: Using The Operating System. Oakland. DataNet. Call: (415)465-9084.

July 9 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

July 10–12 Artificial Neural Networks Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: Institute in Computer Science, (408)429-4535.

July 11–13 The 1989 Desktop Presentation Graphics Conference And Exposition. Los Angeles. Cambridge Marketing. Call: 1-800- 262-3378.

July 11–14 Writing Better Computer Software Documentation For Users Course. Santa Cruz. University of California Extension, Santa Cruz. Call: (408)429-4535.

July 11 How To Successfully Automate Your Business Accounting System Seminar. San Francisco.

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CALENDAR OF EVENTS *continued*

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July 13–14 Time Line 3.0 Workshop. San Francisco. Symantec. Call: (415)898-1919.

July 14 Open House. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 14 LAN Essentials: Installation & Configuration Class. Oakland. DataNet. Call: (415)465-9084.

July 15 Shop Till Ya Drop Computer Swap. Santa Clara. Richard James. 1-800-433-7469.

July 15–16 Dubner Turbo-Paint Workshop. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 15 LAN Trouble Shooting & Diagnostics Class. Oakland. DataNet. Call: (415)465-9084.

July 16 San Francisco Computer Show, Sale, And Swap. Fort Mason Center. Compu-Shows. Call: (415)931-0423.

July 16 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

July 17–19 An Introduction To 4.3BSD UNIX Internals: Data Structures And Algorithms Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: (408)429-4535.

July 17 Intro To SunOS And UNIX. Sun Microsystems. Call: 1-800- 423-8020.

July 18–21 UNIX Hands-on Workshop. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800- 421-8166.

July 18 Intro To UNIX For Programmers. Sun Microsystems. Call: 1-800- 423-8020/

July 20–21 An Introduction To 4.3BSD UNIX Networking Internals Course. Techmart, Santa Clara. University of California Extension, Santa Cruz. Call: (408)429-4535.

July 21 MDTA Meeting: Adam Osborne Speaks. Walnut Creek. Mount Diablo Technology Association. Call: (415)932-4828.

July 21 System Manager: Using The Operating System. Oakland. DataNet. Call: (415)465-9084.

July 22–23 Quantel Paintbox Workshop. San Francisco. Computer Arts Institute. Call: (415)546-5242.

July 23 Computers, Cameras, And Video Swap And Sale. Alameda. Call: (415)522-3336.

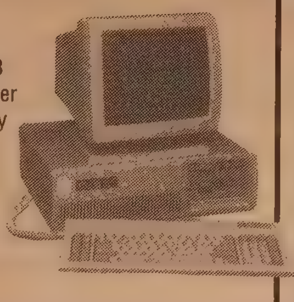
July 24–25 Time Line 3.0 Workshop. San Francisco. Symantec. Call: (415)898-1919.

July 25–28 Software Project Management Tools & Techniques Course. San Francisco. Integrated Computer Systems. Call: 1-800- 421-8166.

July 25 Automating Your Accounting System With Solomon—See What It Can Do For Your Business!

continued

80286-12 BASIC SYSTEM



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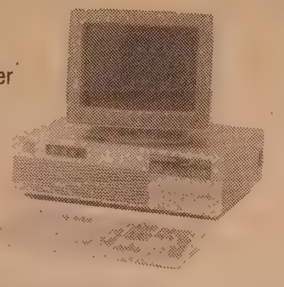

- 80386-20 MHz 0 Wait State Motherboard
- 1MB Expandable to 8 MB
- Hard and Floppy Drive Controller
- 1.2 HD Drive
- AT Case w/230W power supply
- 101 AT/XT Keyboard
- MGP card

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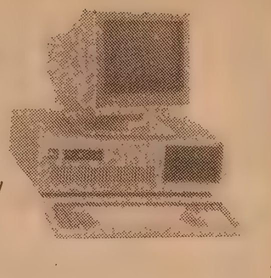

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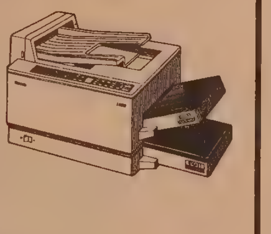

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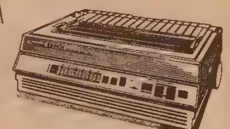

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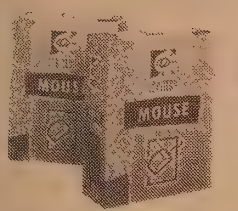

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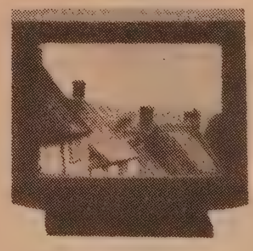

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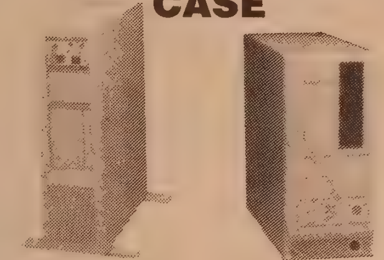

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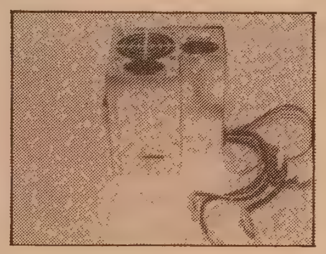

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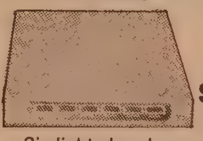

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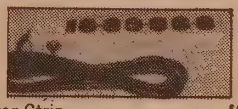

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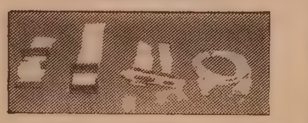

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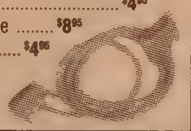

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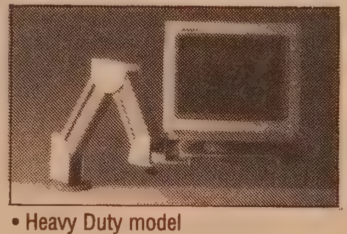

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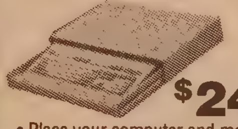

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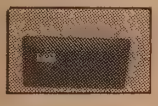

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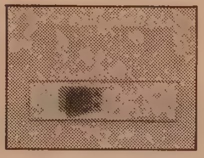

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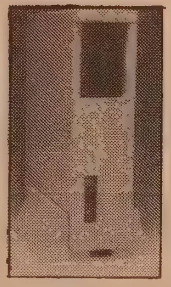

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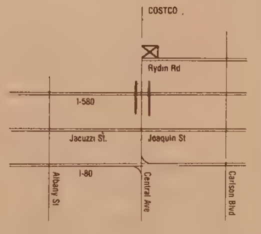

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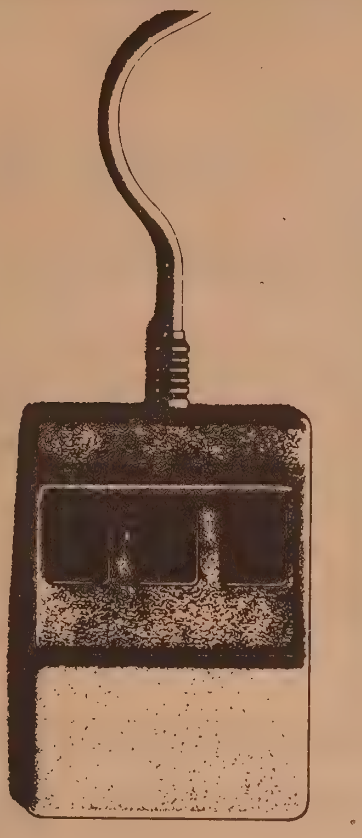

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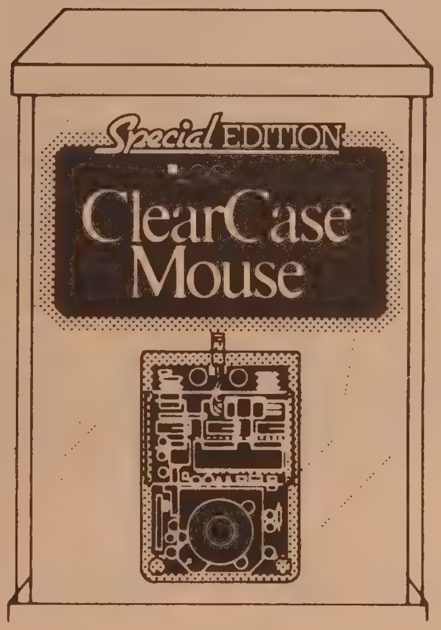

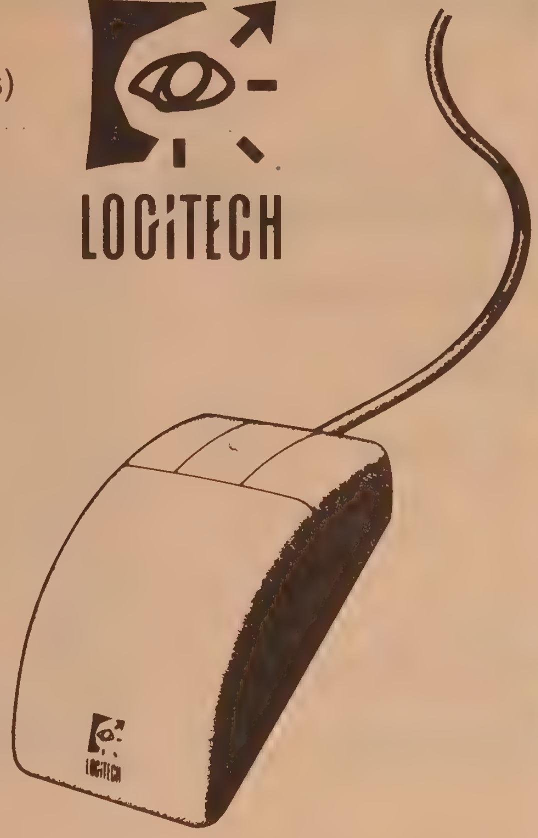

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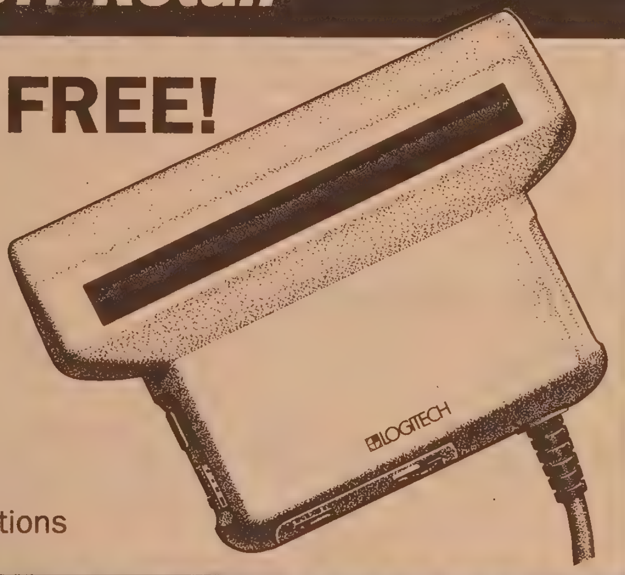

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Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

Apple Previews System 7, Safer Solvent From Japan, New IBM Machines

Apple Previews System 7

Apple struck back at the rumor mill by showing the developers and the press what it expects the next generation of Macintosh operating system will look like. The move is fairly gutsy for Apple, since they readily admit that the operating system won't be available for about a year and, if this is like other releases of their operating system, they will probably be late even with that deadline.

While Apple's preview gave the press something to talk about for a year, it also gives Apple's competitors a year to improve their products to match the features that Apple says will come in the new system. Apple has determined, however, that companies like Microsoft move too slowly to take advantage of this public knowledge and that it therefore had little to lose by previewing the features so far in advance.

The enhancements in Version 7, as Apple so picturesquely calls the new operating system, are wide-ranging and novel. Many add new capabilities, which can be used by applications developers, but the more important ones are features that make the Macintosh even easier to use. Although most people will agree that the Mac's operating system is significantly easier to learn and use than its main competitors (MS-DOS, Microsoft *Windows*, and OS/2), there are still many pitfalls for the average user. Version 7 attacks many of those faults by making established features such as fonts easier to handle. Apple hopes to increase the distance between it and its competitors with these new features, and hopes that the advance publicity for the changes convinces would-be MS-DOS and OS/2 users to take a closer look at the Macintosh.

The changes in Version 7 will not come without sacrifice, however. Apple says that you will need two megabytes of RAM memory in order to run Version 7. Although the vast majority of Macs sold in the past few years are easily upgradable to two megabytes, few users have done so yet. Apple is banking on the price of RAM memory dropping, which is certainly risky given the increasing amount of Japan-bashing going on in Washington DC lately. Even if RAM prices drop, upgrading your Mac's memory involves opening the Mac, something that Apple has made difficult for most end-users. Unless you have a local dealer you trust, you are unlikely to increase the amount of RAM in your system without a fair amount of trepidation. Apple will probably make this step easier later in the year with rebates, price decreases, or special offers.

Apple says that the new operating system will be compatible with virtually all of the current Macintosh programs and will therefore not cause any disruption during the upgrade process.

The new features, which should be available to developers in six months and users within a year, include:

InterApplication Communication Architecture—Programs from different manufacturers will be able to send messages and pass data much more efficiently and without any interaction from the user. This is similar to features that already exist in Microsoft *Windows* and OS/2, but Apple is making this facility work not only between applications running on one Mac, but on applications running on many Macs on a network. For example, a spreadsheet program will be able to use the features in a word processing program to format data, even though the spreadsheet program does not have those features. Currently, programs can only communicate by exporting and importing files on disk and through the Clipboard.

The enhancements in Version 7, as Apple so picturesquely calls the new operating system, are wide-ranging and novel.

Apple has taken a giant step forward by allowing programs not only to communicate while they are running but to store instructions for each other and to execute them at a later time. This will help users who do not have high-end Macintoshes, since they may not be able to run all the desired programs at once. The new operating system will also support "live" editing of elements of documents that are created in other programs. For instance, if you create a chart in a spreadsheet program and include it in a word processing document, you can update the chart later in the spreadsheet program and have the changes automatically reflected in the word processing document. Although this feature is available now between certain pairs of programs, Apple is determined to have it become a universal feature and therefore has put it in the operating system.

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NEWS AND ANALYSIS

Virtual Memory for Advanced Macintoshes—If you own a Mac with virtual memory hardware (that is, any Mac with a 68030 CPU or a 68020 CPU with a 68851 co-processor chip), Version 7 will give you true virtual memory capabilities. Virtual memory is a method for making part of your hard disk seem like RAM memory. If you are willing to sacrifice five megabytes of hard disk space, programs will think that you have added five megabytes of RAM to your system.

Since hard disk space is significantly cheaper than RAM (although also significantly slower), this option will be very popular with users who want to run many programs at once or occasionally want to run a memory-hungry program. Again, this will work with programs even if they were written without knowledge of Version 7. This is one of the features that drives many people to UNIX, which has a very clean implementation of virtual memory, and Apple hopes to draw many would-be UNIX users to the Mac fold by offering this on its entire line of systems.

Along with the virtual memory system, Apple is requiring that all applications work in 32-bit environments (prior systems only worked in 24-bit environments). This allows applications to use more than eight megabytes of memory without going through the programming contortions necessary on systems such as MS-DOS. Apple has been warning developers of this for almost a year, so there will be very few applications that do not work correctly with this new limitation when Version 7 is released.

Better File System—One of the worst problems with many applications is that if you move one of the files you are using, you have to find it again when you want to change it. Some applications make you keep your files in one spot and never move them. Version 7 will include the ability for programs to find files by an identification number, not its location on the disk. You will also be able to more easily read and use files from other operating systems such as MS-DOS and UNIX. The new file system will also let programmers get better access to the information stored for the Finder, the Macintosh's user interface for running programs and copying files. Programs (and, of course, users) will be able to search through the files on a large hard disk very quickly, so users will not have to spend so much time remembering where they put files or planning on how to arrange files for the benefit of programs.

Transparent Database Access—When Apple bought Network Innovations last year, it did not indicate how it intended to use NI's CL/1 data access language in future products. Apple now says that Version 7 will have CL/1 integrated into the operating system so that database software vendors will have a standard method for accessing data on other systems and so that Macs and PCs on the same network can share databases easily. CL/1 is based on the SQL data model, which has been adopted by most mainframe and minicomputer software vendors, and is appearing in many PC-based applications such as *dBASE IV*. CL/1 can even access non-SQL databases. This should help Apple compete in data-intensive office environments and will make it much easier for Apple developers to connect with non-Macintosh systems. The fact that it comes free with the operating system should be embarrassing to IBM and Microsoft, who charge hefty amounts over the base price of OS/2 for their data handlers.

The changes in Version 7 will not come without sacrifice, however. Apple says that you will need two megabytes of RAM memory in order to run Version 7.

Transparent Communications Access—Although the demand for a unified communications interface has not been high, Apple decided to create a single system-level package that makes including communications in other packages much easier. The communications toolbox in Version 7 will come with three types of drivers: hardware interface drivers (such as serial lines and modems), file transfer drivers (such as XMODEM and KERMIT), and terminal emulation drivers (such as for VT100s). Other drivers will be sold by third-party developers. The communications toolbox should make communicating with other computers much less confusing and frustrating than it is on almost every known computer system. The toolbox will be configured like other parts of the new Macintosh system: by dragging files into folders (see below). The communications toolbox will be especially welcome to DEC network users who will be able to communicate with their DEC systems over Ethernet just as they would if they dialed into the system over a modem.

Fonts and Printing—The announcement that made the biggest waves was that Apple has developed its own technology for scalable fonts, displacing Adobe's PostScript for future printing systems. Apple's new scalable fonts let users print good-looking documents on anything from an ImageWriter to a typesetter and be able to use the same fonts and the same programs. Apple made it clear that it was not abandoning Adobe in the short term; it will probably not be able to completely abandon them in the long term, since the typesetting industry has now switched almost completely to PostScript. Apple's outline fonts work as well on monitors as they do on printers, so that programs such as word processors and desktop publishing packages will not need to have special rules for printing on different devices as they do now with PostScript. Apple will publish the font format openly so that all font manufacturers can produce fonts for it. In fact, almost every major font creator said that it will support the new format at the announcement.

The new fonts come as part of a larger package of printer enhancements. Apple has changed the way that printers will interact with the system, supposedly making it easier to create printer drivers (which are almost impossible to create for the current system). Other improvements include better display of characters on the screen, more language-independent features, and better handling of color and grayscale printers. Apple is finally opening up to non-Apple computers and admitting that one of the most expensive parts of the Macintosh system has been the Apple-produced printers.

IBM Introduces 80386 "Portable" and 80386SX PS/2s

Re-entering a market that it has repeatedly failed in, IBM announced a "portable" version of its PS/2 Model P70. Weighing more than 20 pounds and costing $7695, the new machine will only be attractive to executives who require lots of power and are willing to pay a premium for the IBM label. Similarly-powered and lighter-weight portables from clone makers cost about 40% less noted many market analysts who expect initial sales of the new machine to be very slow.

Although the display on the new portable is crisp and clear, many portable manufacturers are switching to better displays, and portables with gas-plasma displays are now common. However, the P70 is the only shipping portable computer with MicroChannel Architecture slots. There is a full-size MCA slot and a half-size 16-bit slot, IBM's first. The half slot has many peripheral manufacturers wondering whether this is a trend or just a short-lived aberration.

The new Model 55 SX with a 30 megabyte drive is $3895. This is the first computer IBM has released based on 80386SX, but IBM indicated that there will be many others. The SX chip bridges the gap between the 80286, now the standard for most business systems, and the much faster 80386. The 80386SX chip can run all the software that runs on the 80386 including new multitasking operating environments. IBM noted that the cost of the Model 55 SX is the same as the 80286-based configuration was a year ago and runs about 20% faster.

IBM also announced a convoluted rebate scheme for OS/2. The rebates are on the operating system when purchased with extra megabytes of IBM-label RAM memory needed to run OS/2 or with IBM hard disks. Owners of OS/2 Standard edition get $100 per megabyte purchased and owners of OS/2 Extended Edition get $200 per megabyte. Vendors of OS/2 software also announced rebates on various software. ■

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NEWS
AND ANALYSIS

MIDI and Sound—Apple will bundle MIDI tools and improved sound capabilities in Version 7. Although the MIDI market is not large, it is certainly a visible one which Apple can milk for good publicity (you know, pictures of rock stars, keyboards, and so on). With MIDI built into the system, the Macintosh will become more of an "entertainment industry" computer. The new system will also allow multichannel sound that can take up as much or as little of the CPU's processing power as you want. One of the main weaknesses of the Mac's sound is that it takes up a great deal of the CPU's resources, especially on 68000-based Macs. The new system lets you allocate the CPU to do other things and get around to the sound only a small amount of the time. The new system will also have sound compression algorithms, which let sounds take up much less space on disk.

New Finder—Probably the most immediately noticeable change in Version 7 will be the changes to the Finder. Although these are not of much interest to applications developers, users will notice that they make the Mac much easier to use than the current Finder. For example, there will be no more use for the Font/DA mover: all fonts and desk accessories will be made available simply by dragging them into the appropriate folders. The desk accessory menu will also be able to hold applications so that you do not need to search in folders for commonly-used applications. The Finder will (finally) have help screens built in. Desk accessories will look just like applications: they will have icons on the desktop. Apple's goal is to make the user interface much more consistent and to have fewer special cases in the user's interactions.

Once Version 7 is released, Apple will have by far the most complete and easy-to-use operating system on a common microcomputer. The NeXT machine will be its only rival for system usability. Microsoft *Windows*, even though it has obviously borrowed major concepts from the Macintosh, is still quite unfriendly and unintuitive, due mostly to Microsoft's unwillingness to distance *Windows* too far from MS-DOS. *Presentation Manager* for OS/2 suffers most of the same problems. Yet it is clear from the sales figures that ease of use and ease of learning are not large factors in buying decisions; if they were, the Macintosh would have sold many more systems by now. Thus, Version 7 will probably not have a large sales impact on the Macintosh.

Version 7 might, however, have an impact on what the Macintosh imitators do to make their systems friendlier. For instance, being able to install new fonts simply by dragging them into the correct folder is not only easier than the current method with the Font/DA Mover, it is phenomenally easier than the font installer in *Windows* or in OS/2 *Presentation Manager.* Microsoft has not felt much need to copy all of what Apple does (and Apple's lawsuit has certainly made Microsoft a bit defensive about the parts that it did copy), but at some point they are going to start feeling the heat from Mac users and from users of the new UNIX user interfaces which

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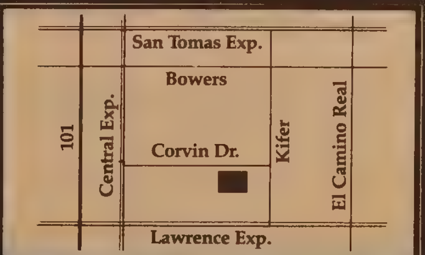

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NEWS
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are becoming available. Apple's early announcement of Version 7 might give some people a time advantage, but Apple does not seem too concerned since anyone emulating the changes will certainly be compared to Apple and not vice verse.

The press will also have to start coping with some new ideas when they discuss the Macintosh. The virtual memory system is much more natural in the Mac than it is under OS/2 due to the lack of segmented memory.

Since Apple is bundling all the new features in the operating system instead of charging for them like IBM, the press will have to be careful when discussing what is part of the operating system versus what is available at extra cost. This distinction is another major (but often unrecognized) part of ease of use. All too often users assume that they can do something and discover that they can't because they were confused about what came with their system and what was available at extra cost. IBM is one of the major perpetrators of this confusion, being the first microcomputer company to sell computers where you had to buy the operating system separately from the hardware. With OS/2 costing a significant percentage of the price of the hardware on which it runs, more and more users will become distressed when they find that it doesn't contain the features that the press is comparing to what comes free in the Macintosh operating system. This may cause Microsoft to bundle more into OS/2 and MS-DOS, but this isn't to be expected any time soon.

Japanese Manufacturer Develops Safer Solvent

Daikin Industries Ltd, a Japanese air conditioner maker based in Osaka, has introduced a new chemical to replace CFC-113, a common solvent in the computer industry. CFC-113 has been widely blamed for the erosion of the ozone layer covering the earth. Daikin's new solvent, pentafluoropropylalcohol, has similar chemical properties to CFC-113 and will therefore be easier to substitute for CFC-113. It is also does not burn and is considered to be non-toxic.

CFC-113 is used throughout the computer industry to remove dirt and solder flux from components, and an estimated 20% of the CFC-113 released into the atmosphere is from the electronics industry. Most of the rest of the CFC-113 that is released comes from refrigerators and air conditioners, the field that Daikin is in. (Many news reports mistakenly called Daikin a chemical company, even though only 15% of its 1988 revenue came from chemicals.)

Daikin enters an increasingly-crowded market for CFC-113 replacements. The basic problem with CFC-113 is that it remains stable as it rises in the atmosphere until it reaches the ozone layer, where it combines with ozone to create other compounds. Many other Japanese and American companies are beginning to introduce solvents that have extra

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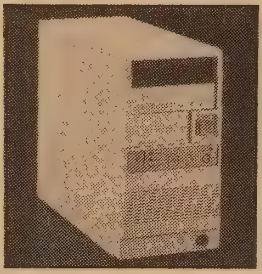

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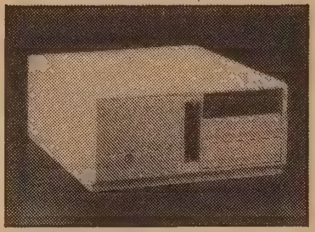

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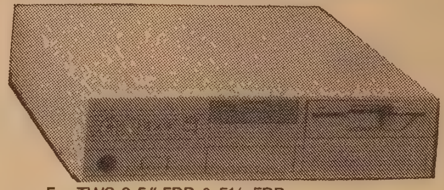

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NEWS AND ANALYSIS

hydrogen atoms that let the chemicals break down at lower altitudes, although it is not clear whether this will have a significant effect. The Daikin product has no chlorine atoms, but atmospheric scientists disagree on whether fluorine atoms will be much better than chlorine. Since Daikin has just begun producing the solvent, its cost is very high relative to other CFC-113 replacements.

Daikin developed the solvent for its own equipment and realized the potential for worldwide use. Sumitomo companies own over 20% of Daikin and can be expected to help finance the development of less expensive manufacturing processes for the new solvent. Currently, Daikin only exports 11% of its goods, but this can be expected to rise significantly if it licenses the manufacturing technology for the solvent to American and European manufacturers.

If It Ain't The Copyrights, It's The Patents: More Lawyers In The News

Look-and-feel had a slow month but hardware and software patents have taken up the slack. Spring is the season for computer law meetings and maybe they needed something to talk about.

•In a move that acknowledges the role of Texas Instruments in establishing the dynamic RAM market, Micron Technologies, the only other US DRAM manufacturer, has paid TI $38 million and agreed to pay ongoing royalties on both DRAM and any semiconductors encased in plastic. The settlement brings to a close TI's long-standing battle with other DRAM manufacturers over patents that it received in the early days of the DRAM industry. TI had previously gotten large settlements from many Japanese and Korean DRAM manufacturers. Micron Technologies is the only manufacturer to make DRAM in this country (TI manufactures them in Malaysia and other Asian countries) and has drawn many of TI's employees when TI was forced into layoffs due to problems in other parts of the company. As part of the settlement, TI also got rights to many of Micron Technologies' patents.

•Tandy's recent purchase of GRiD should keep a few Tandy lawyers busy. Chief Executive John Roach now claims that GRiD holds a few patents that may relate to most of the portable computers on the market. Refusing to go into detail, Tandy asserts that it holds patents on portables that have a screen that folds down over the keyboard. This design has been adopted by the vast majority of laptops as a method of saving space. The fact that Tandy would not elaborate has caused many of their competitors to accuse them of trying to confuse the market without any supporting evidence. Tandy and GRiD have yet to approach other portable manufacturers with specific requests for royalties, and many computer lawyers are skeptical that they could at this late date.

•Quarterdeck, makers of the popular *DESQview* multitasking operating environment, have received a patent that covers a method for displaying information within windows capable of overlapping on

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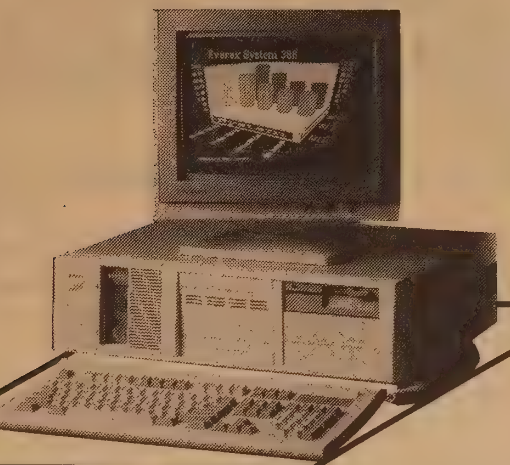

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CPU	8088-12	80286-10	80286-12	80286-8	80286-10	80286-10	80286-12	80386-16	80386SX	80386-20	80386-25
SPEED/WAIT STATE	12MHz/0	10MHz/1	12MHz/0	8MHz/1	10MHz/1	10MHz/0	12MHz/0	16MHz/0	16MHz/0	20MHz/0	25MHz/0
KBRD SWITCHABLE	YES 8MHz	YES 8MHz	YES 8MHZ	NO	YES 8MHz	YES 8MHz	YES 8mhZ	YES 8MHz	YES 8MHz	YES 8MHz	NO
RATINGS											
Norton SI	N/A	9.8	13.7	7.7	9.8	11.2	13.7	18.4	22	22	28.5
Mips	N/A	1.21	1.7	0.96	1.21	1.4	1.7	2.2	2.66	2.65	3.36
Landmark	N/A	5.2	8.45	4.1	5.2	6.8	8.4	12.3	N/A	13.6	N/A
INTERNAL											
Memory	256K	512k	1MB	512K	512K	512K	1MB	1MB	1MB	1MB	1MB
Controller	FLOPPY	1:1	1:1	REG	REG	REG	1:1	REG	1:1	1:1	1:1
Floppy Drive	360K	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB
BIOS	AMI	AMI	AMI	AMI	AMI	AMI	AMI	AMI	AMI	AMI	PHEONIX
Power supply	150watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt	200watt
Cache	NO	NO	NO	NO	NO	NO	NO	64K	NO	NO	64K
Clock	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Ports	NO	1S/1P	NO	NO	NO	2S/1P	NO	NO	NO	2S/1P	2S/1P
Slots	8 8-bit	6/2	4/4	6/2	6/2	6/2	4/4	6/2	8 16-bit	6/2 32-	5/1/02
Math Co-proc. Supported	8087	80287	80287	80287	80287	80287	80287	80287	80387SX	80387	80387
EXTERNAL											
Chassis	"baby AT"	small	small	full size	full size	full size	full size	full size	small	full size	full size
1/2 Ht. Bays	4	3	3	5	5	5	5	5	3	5	5
Reset Switch	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes
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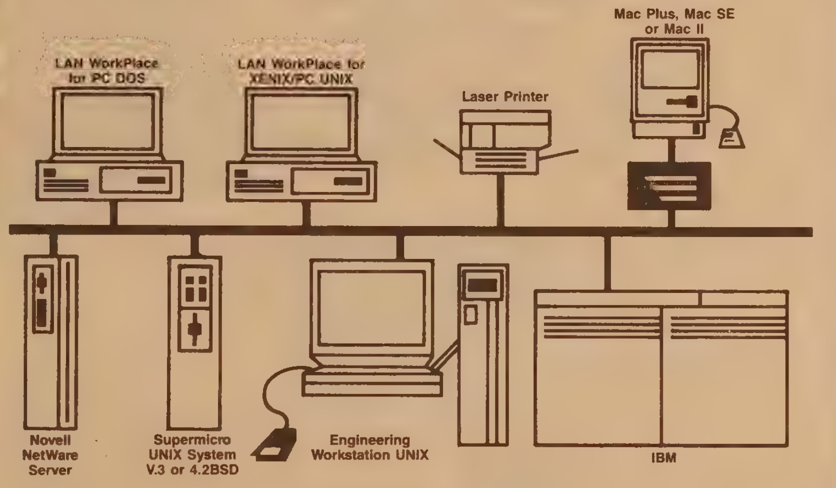
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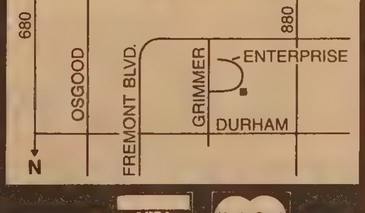

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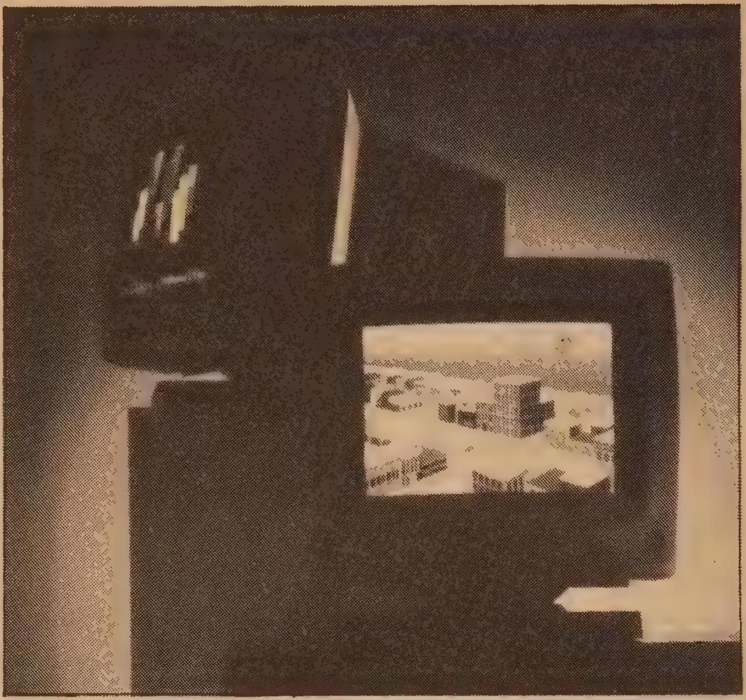

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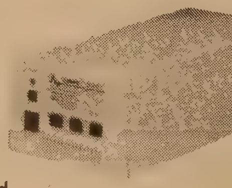

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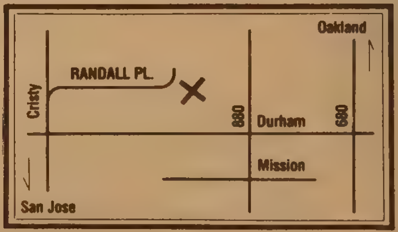

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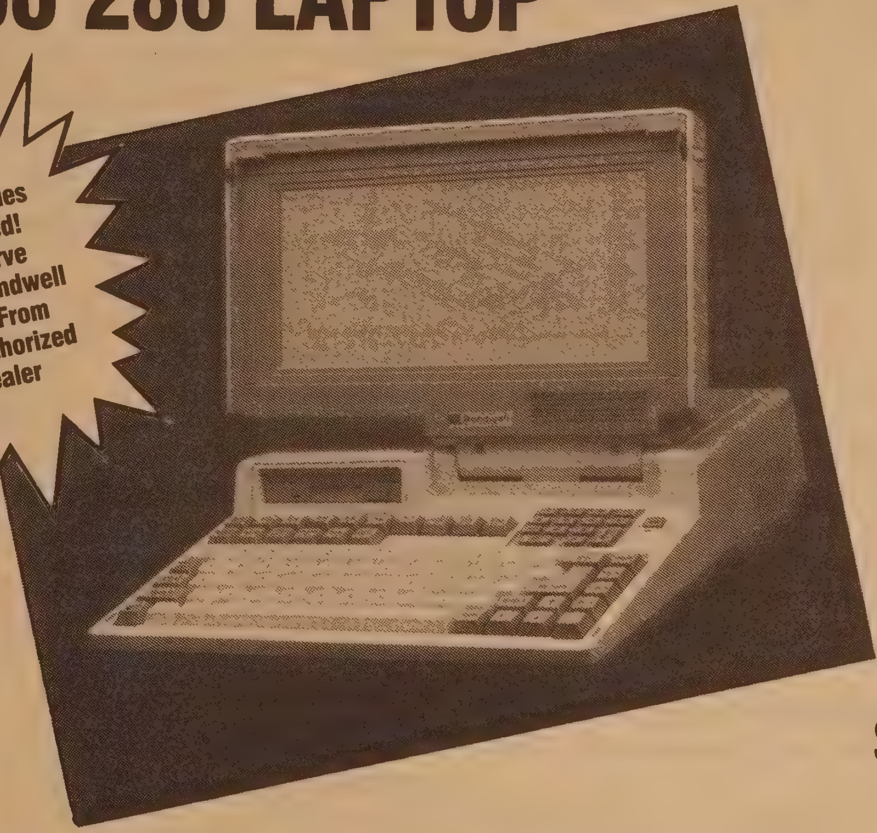

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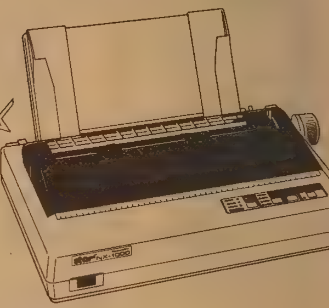

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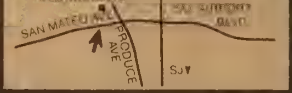

a video display. All major competitors of Quarterdeck have since claimed that their products do not infringe on the patent, but Quarterdeck disagrees and says that it is currently asking some manufacturers for royalties.

When the patent was first announced, some industry commentators speculated that it covered everything from OS/2 *Presentation Manager* to *X Windows*, but Quarterdeck quickly said that the patent was not all that broad. However, it is likely that the patent will cover the common methods some companies use to add multi-tasking to MS-DOS, and possibly even to parts of character-based OS/2. Quarterdeck is assuring the industry that it has no intention of using the patent to shut down competitors, but does intend to make some money off of it.

•IBM's long-standing patent on RAM memory access, commonly called the Christiansen patent after the primary designer named in the patent, may restrict makers of EISA if they don't settle up with IBM before producing machines. The patent covers the way that memory and peripheral devices communicate through the bus. IBM has already made deals with Wyse, Samsung, and Daewoo, but major manufacturers such as Compaq, AST, and Zenith have so far not made any arrangements. IBM is charging 1% of the sales price of every PC sold for use of the patented technology. The EISA bus standard competes with IBM's MCA bus standard for peripherals, and many manufacturers are betting a fair amount of their company's futures on its success. Some EISA manufacturers say that the Christiansen patent does not cover the EISA bus, but others are being much more cautious and are negotiating with IBM in case. IBM has already stated publicly its belief that the patent covers EISA machines, which indicates that they will probably take legal moves against any EISA manufacturer who has not licensed the Christiansen patent when the machines come out. Copies of the Christiansen patent are available for $50 from MicroDesign Resources, publishers of the *Microprocessor Report*, at (415)494-2677.

Silicon Graphics Beefs Up Personal Iris Graphics With Full Color Upgrade

Not content to sit on its laurels, Silicon Graphics announced a significant upgrade to its popular Personal Iris graphics workstation. The Full Color Upgrade takes the standard 256-color system to a full 16.7 million colors with overlay and window color panes. This makes the workstation able to display extremely high resolution color with photorealistic accuracy. The standard Personal Iris workstation costs $16,000, and the Full Color upgrade costs an additional $6000.

Silicon Graphics expects the upgrade to be popular in the video production and simulation markets. The upgrade can be installed by the user and will allow present applications to use all the new colors automatically. ■

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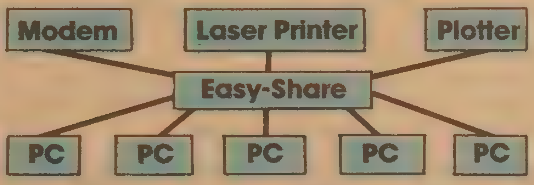

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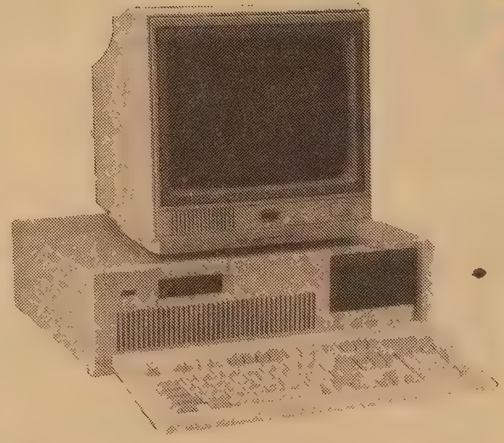

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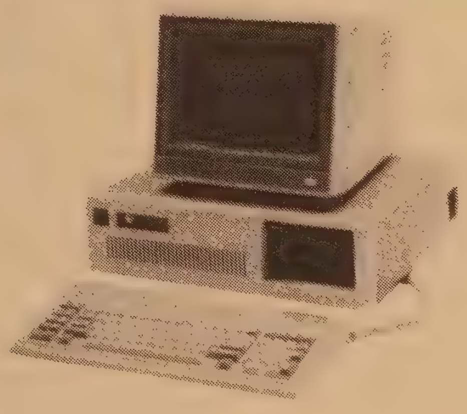

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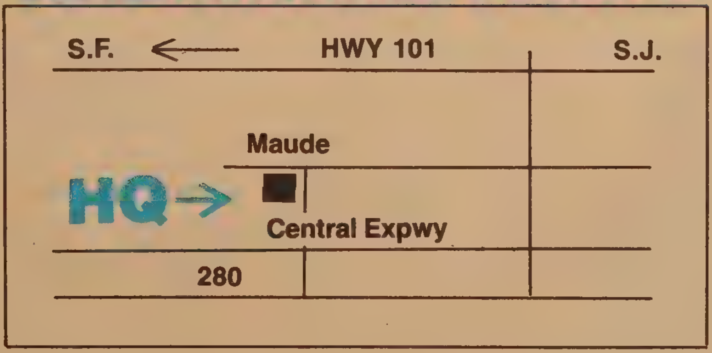

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REALIZABLE FANTASIES • BY JIM WARREN

Decent Education: A Realizable Fantasy?

'I'm mad as hell" (you should be, too), and we *must* not take it any more!

San Jose Outrage

On April 25th, about 80% of San Jose's "teachers" suddenly refused to enter their classrooms—after unsuspecting students, including young children, were in class and their unwarned parents were at work. Earlier, a surprise "sickout" similarly victimized parents and children without warning.

Unlike responsible union action—which minimizes harm to innocent bystanders—this compares to pilots suddenly refusing to show up after unwarned passengers board scheduled flights and engines are running. It's like surgeons never appearing for serious-but-optional surgery that they scheduled, after patients are prepped and on the operating table.

As of this writing, the San Jose teachers' union has refused offers from their District, independent mediators, and independent fact-finders: A 4.32% increase, plus up to $3,000 in medical benefits, plus another $900 or so in other benefits. That would pay starting teachers $22,821 and top-step teachers with a Master's degree $43,265, and allow 10 cumulative days/year for illness or "personal necessity" (the March sickout?).

All for working 183 days per year, at the worksite from about 8 am to about 4 pm.

The union demanded 7% and full benefits costs, even if they exceed $3,900/year.

Los Angeles Ransom

The LA teachers' union even more outrageously victimized innocent students. It urged members to conceal roll books, refuse to issue or record final grades, and refuse to give CTBS and advanced placement exams needed by graduating(?) seniors for college entrance, scholarships, etc.

As of May 12th, the union refused a three-year, 21.5% salary package that would guarantee $26,714-$49,021 in 1989 and $28,427-$52,030 a year from now—plus 100% of medical, surgical, dental, vision-care, and life insurance.

All for mostly self-directed work for less than 9--1/2 months.

In mid-May, L.A. teachers went on strike.

How's This Compare To Computer Folks?

Recently reported 1988 Labor Statistics for the San Jose metro area show computer operators making about $24,310, engineers averaging $42,296, systems analysts making $43,186 and top engineers drawing $74,776.

But, instead of teachers' 25-45 hour work-week for 175-185 days, most computer pros work 40-60 hours (33%-60% more) for 220-240 days (26%-30% more).

Computer workers generally have much less autonomy than teachers in assignments, designs, work techniques, schedules and work evaluations. Unlike teachers, computer pros can rarely choose whether to work, or just sit around a lounge smokin' and chatting for about an hour every morning or afternoon.

Perhaps most different: Technologists are often promoted if they do well, and usually fired—and fired quickly—if they become nonproductive. In contrast, teacher unions invariably and violently oppose promotion based on teaching excellence. And teachers who are "merely" grossly nonfunctional are usually retained and automatically moved up the salary schedule. They harm their students' education, embarrass their peers, earn disrepute for education, and—by state tenure law—during cutbacks such educational deadwood knock off junior faculty who are highly productive, dynamic, inspiring and energetic.

But How Else Does This Concern Computing?

If the answer is not obvious, here are some additional tidbits:

At a recent microcomputer workshop for 100 of microcomputing's elite, 3 of the 40-or-so open-forum speakers devoted their entire comments to problems public school education poses for the industry and the national well-being.

Electronics is now the nation's largest manufacturing industry, employing 1.6 million Americans and earning over $340 billion, worldwide—three times more than the US auto industry. It's in vigorous competition with Japan, Inc., and soon with Europe, Inc., and undoubtedly Asia, Inc. Does anyone think we can sustain our national financial and employment well-being with students being bludgeoned as they are in union-District conflicts like these?

Other countries have long school days, long school years, and demanding educational criteria. But our Secretary of Education recently detailed evidence that US education is "stagnating" and educational reform "has lost its momentum": SAT and ACT college entrance scores are declining; high school dropouts have increased to 28.9%. (Would you bother attending school if your teachers might not show up, and you found many spending class time encouraging students to demonstrate for ever-higher teacher salaries?)

School spending of your tax money—after adjustment for inflation—increased 26% from 1982 to 1987, while performance and attendance declined. Teacher unions often publicly demand smaller classes, more prep time, better facilities, and higher salaries—then settle for larger classes, less preparation time, degenerating facilities...and higher salaries.

Solutions ARE Realizable

First, parents/students must be free to choose—and direct their tax-paid tuition to—teachers and schools from among those teachers who are available and qualified, and from those schools (public and private) that fulfill state requirements for curriculum and economic and ethnic diversity.

Regarding irresponsible walkouts: If you have a Bachelor's degree or higher, volunteer as a substitute teacher if teachers walk out based on demands you feel are unreasonable. Pre-clear this idea with your boss—call it "community responsibility leave." It requires some planning: Take the California Basic Educational Skills Test (CBEST), given statewide several times annually. (Until the mid-'70's, reasonably-qualified substitutes could get emergency certification. However, during a strike, many well-educated parents and professionals helped as substitutes. Thereafter, the legislature mandated the union-supported CBEST requirement, and—surprise!—the law prohibits scheduling special CBEST testing during a strike.)

Regarding teaching excellence: Most—I reiterate, *most*— teachers are reasonably responsible, reasonably dedicated, and do a job that ranks between reasonably good and outstanding. These worthwhile teachers are as much victimized by money-grubbing zealots and faculty deadwood as are their students and the public education system.

Vigorously demand of your legislators that state tenure laws be modified: Minimize the number of steps in teacher salary schedules. Note: For their first 15-25 years, teachers get annual "cost of living" increases *on top of* stepping up their salary schedule.

For retention, as well as for promotion, require rigorous performance evaluation—involving in-depth peer review, input from current and former parents/students, and some administrator input. It should be far more than a preannounced classroom visit/observation, once every two or three years, that is too often the only evaluation basis permitted by union contract.

Teachers who want a faculty-style union to negotiate their job security, working conditions salaries, and benefits should and do have every right, make that choice. However, those who choose to function as factory workers should not also have the tenure protection designed for educational professionals and made law when teachers had no other job security.

If legislators can't override protectionist lobbyists, then we must do it—now!—via ballot initiative. At issue is nothing less than our national future and well-being.

Back To The Future

Fear not. Future columns will again address proposals that are much more technologically interesting—and much less consequential. Send your ideas to Jim Warren, Realizable Fantasies, 345 Swett Road, Woodside, CA 94062. Published proposals will be attributed unless their authors request anonymity. ■

Copyright © 1989 by Jim Warren. All rights reserved. *Jim Warren founded the West Coast Computer Faire, the* Silicon Gulch Gazette *and* InfoWorld *newspapers, Video Initiative, and the DataCast proposal for broadcast-based paperless electronic newspapers utilizing personal computers. He was the founding host of the PBS* Computer Chronicles *series, founding editor of* Dr. Dobb's Journal, *and founding president of the Microcomputer Industry Trade Association.*

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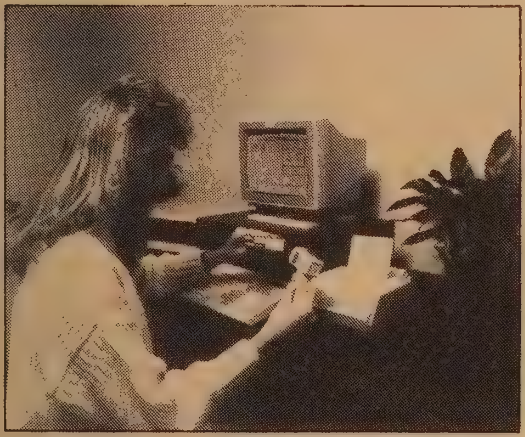

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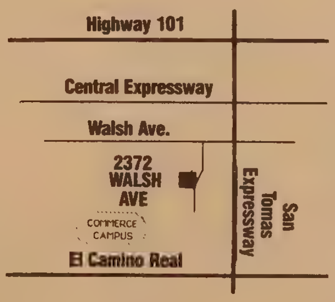

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GUEST EDITORIAL • BY ROBERT F. KAY

Public Relations—It's Not Just For The Big Firms

Public relations is becoming increasingly important as a marketing tool for businesses of all sizes and varieties. A good PR program can be very helpful in selling your wares and apprising the public through the media of how you and your company stand in the market place.

Contrary to what many owners of small and mid-sized businesses believe, PR is not just for companies with big promotional budgets. Smaller firms can readily take advantage of the benefits of PR without paying exorbitant fees. A smart, knowledgeable publicist in a small office with a computer and a fax machine can generate results equal to or better than an international PR firm with French impressionist paintings on its walls that charges astronomical fees.

Before proffering advice on how to choose a PR firm, let's clear the air and describe what the publicist does. Simply put, it's the publicist's job to get the media (either print or electronic) to report editorially on your products or services. Thus, when you read a product review in a magazine, very often a publicist was instrumental in setting it up.

You must genuinely feel that the individual you're dealing with will be working hard on your behalf. Use your intuition. Distrust anyone who guarantees too much—chances are they won't be able to deliver.

It's a simple concept and it works very effectively.

Assuming your company could use PR to promote new services or products, how do you choose the right PR firms to help you?

You might start by asking colleagues or friends for referrals. Have they had success with PR, and with whom? Perhaps a PR firm has already approached your company, but you felt you weren't ready. Now you are. Narrow down a choice and invite the prospective publicist to sit down and talk.

The Interview

The first questions you ask should be practical. How much does this person know about the industry and your particular niche? What kind of track record does he or she have? A few clippings from work done for past clients speak much louder than words.

Does the person seem to understand your business and your specific market? Does the publicist fit into your marketing scheme? Does he or she seem to know people in the industry? Is this person a competent writer, able to distill what you want to communicate about your product in an effective manner? What do past clients say about the PR firm's work?

Assuming your prospective publicist meets the basic requirements, such as knowledge of the industry and experience, you should pay attention to your gut feelings as well as to your "rational" sense.

Some visceral questions you might consider: What is the chemistry like between you and the prospective publicist? Are the two of you on the same wavelength? Is there a good rapport? Is this person leveling with you? Can this person effectively communicate your message to the media?

If you are going to have an effective working relationship with your PR person, you must base this relationship on trust. You must genuinely feel that the individual you're dealing with will be working hard on your behalf. Use your intuition. Distrust anyone who guarantees too much—chances are they won't be able to deliver.

No one can guarantee what next year's earnings will be, but the track record over the years is usually a good indicator of things to come. Even if a publicist doesn't have a track record in your niche, if he or she understands the subject and has done well for others, chances are you'll have a similarly positive experience.

Big Vs. Small Firm? A Biased Recommendation

Do you go with a big or a small firm? As a small PR practitioner, I'll be the first to admit a bias against the industry giants, the Hill & Knowltons, the Burson Marstellers, et al. Size has no necessary effect on ability. Often larger companies use larger PR firms because they feel safe with a big name. However, using a big firm does not guarantee performance, and it almost certainly guarantees that you'll be charged a higher fee to pay for overhead such as fancy offices, Italian suits, and leather-upholstered chairs.

Also, with a big firm you could be lost in a sea of other clients. A smaller PR firm is likely to give you more attention because your satisfaction has an enormous impact on the firm's ability to pay its bills.

The Bottom Line

How much do you pay for PR? How do agencies charge, and what can you expect in return for your hard-earned cash?

Most PR practitioners charge a monthly retainer or bill by the hour. Fees generally range from $1,500 to $10,000 per month, depending on the size of the account and the amount of work put into the job. Chances are that your firm won't pay the same retainer as, say, IBM or Hewlett-Packard. Rates for adhoc work may range from $75 to $150 or more per hour.

A smart marketer can also parlay a review in a nationally respected publication into a sales tool. The fact that your product has been discussed in a nationally distributed publication can do a lot to convince a distributor or a dealer to take on your company's line.

What kind of results can you expect? You should know within, at most, six weeks whether your PR person is doing the job. It takes time to build momentum on a startup account; however, it shouldn't take more than a month for publications to indicate interest in your business. (However, unless you have a product that's sizzling hot, it's unrealistic to expect results in the first few weeks.)

How much can you expect in print? That's a tough call; keep in mind that the publicist has no control over events. One month may bring one story, the next month perhaps half a dozen. A well-written letter on behalf of a client to a computer or business editor can sometimes elicit immediate results. On the other hand, sometimes an editor will wait months to act on a story, or not act at all.

The client should also value quality over quantity. One or two sentences in the *Wall Street Journal*'s technology column is worth more than a dozen articles in less well-known publications. A smart marketer can also parlay a review in a nationally respected publication into a sales tool. The fact that your product has been discussed in a nationally distributed publication like *PC Magazine* can do a lot to convince a distributor or a dealer to take on your company's line.

If your product has news value and the PR person is skillful, you will get results. Nevertheless, even legitimate stories and products can have difficulty finding their way onto the printed page. Competition for editorial space is fierce.

The conclusion? PR can be a very effective instrument, especially for a smaller company interested in expanding its market share and getting its name known to the public. Is is affordable? Most definitely. Can it help you sell more of your product? If it's done correctly, absolutely. ■

Robert F. Kay is a San Francisco-based high tech and travel publicist. He can be reached at Pac-Tech Communications, Pier 26, The Embarcadero, San Francisco, GA 94105, (415)777-2760.

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VC
The Inside Story

An Interview With Venture Capitalist Frank Caufield

By Dennis Erokan and Mary Eisenhart

PHOTOS: JIM MARSHALL

Some say that Venture Capital is the lifeblood of the high tech industry. Others, using less friendly epithets like Vulture Capital, characterize it as more of a parasite on entrepreneurial activity.

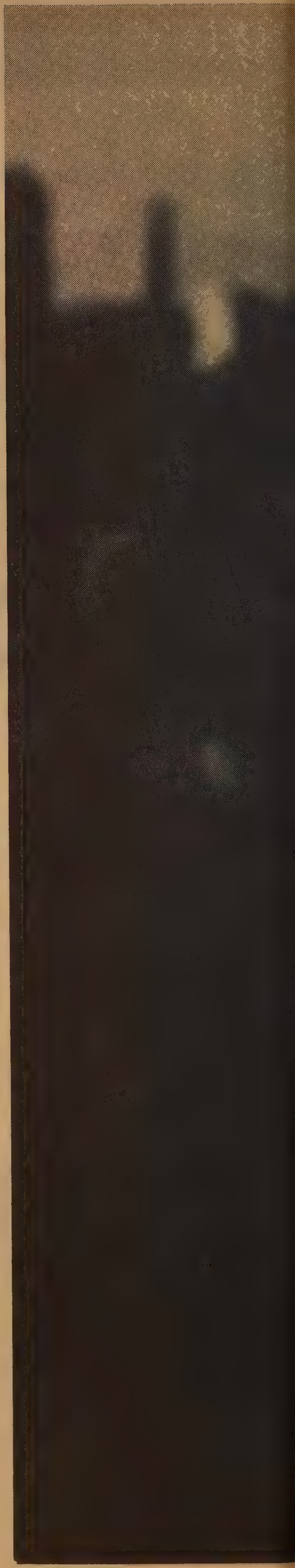
There's a certain amount of credibility to both sides of the argument. On the one hand, venture capital—i.e. money invested by one or more firms in an idea-rich and cash-poor enterprise, usually in return for a certain percentage of stock in the company or a similar arrangement—enabled startup companies like Apple Computer to exist, and clearly create a win-win situation for all concerned.

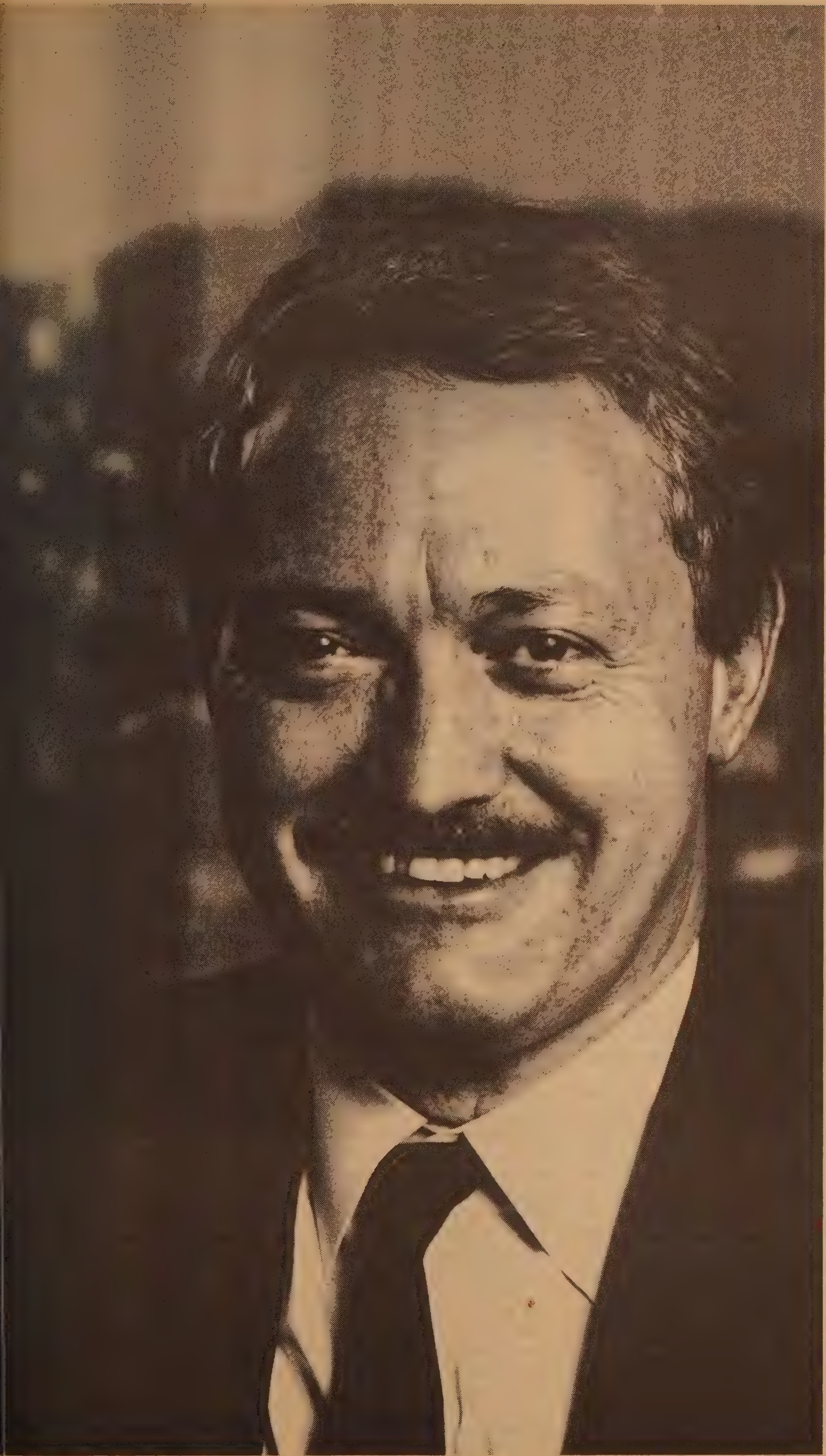
On the other hand, you don't have to talk to too many people in the industry before you start hearing the horror stories. Venture capitalists who take unfair advantage of naive techs. Venture capitalists ousting company founders who fail to perform to expectations. Venture capitalists providing inadequate financing so that promising products die before they reach the market. Venture capitalists with catastrophic and far-reaching lack of judgment.

Frank Caufield is a senior partner of Kleiner Perkins Caufield & Byers, an illustrious and phenomenally successful venture capital firm with offices in San Francisco and Palo Alto. KPCB specializes in high-tech investments, and was instrumental in the startups of (to name only a few of dozens) Ansa, Businessland, Compaq, Electronic Arts, Lotus, MIPS, Palantir, Radius, Symantec, and Sun Microsystems. (It's also a strong presence in the biotechnology field, having helped found, for instance, Genentech.)

KPCB continues to invest in the future. Dynabook, one of its companies, is about to ship its first product, also called Dynabook, an ultra-light handheld PC compatible computer. Farther out on the horizon are products from companies like Prisma, currently designing a new generation of technical computers.

One of KPCB's most noteworthy characteristics is its application of the Japanese *zaibatsu* concept of creative network-





ing among its member companies—a practice that gains additional strength when reinforced by the firm's policy of not backing competitors in a particular market. According to KPCB's informational literature, "KPCB portfolio companies are autonomous, independent entities. They often sell products to each other, and collaboration can go beyond ordinary vendor/customer transactions. The point of the Network is to encourage the independent ventures to accelerate growth and reduce risk while acting in their self-interest.

"There are numerous examples of the Network at work: the launching of *Lotus 1-2-3* and Compaq Computers by Businessland; Sun and Cypress co-developing SPARC processors; and Genentech and Caremark cooperating in the marketing of Protropin (human growth hormone)."

Our visit with Caufield at the San Francisco headquarters of KPCB led to some candid discussion of the venture capital business, its rewards, and pitfalls, as well as the challenges ahead.

In your view, what's a venture capitalist?

Our business is basically raising money. I'll describe the process.

On the one hand, we raise money every three or four years, symbolically put it in the bank, although in some cases the investors keep it and we draw it down periodically. And then the core of our activity is that we go in and try to find new startup high-tech technology companies, at the very earliest stages, in information sciences and life sciences. If we can't find it, we start it ourselves, which we call incubating it.

Then we work with those companies real closely over a period of anywhere from two to ten years, and in the best of cases, take them public or secondarily, perhaps, merge them, and have them be acquired by another company. Or if not, they disappear into the ozone, and we go on.

And the return on the investment is over the entire pool of money, rather than on any individual company?

Yes. We just raised our fifth fund. The first one was 1972 (as Kleiner and Perkins), then '78, '80, late '82, early '86, and early '89 (as KPCB). The return that we would report would be on each of those.

One question I get asked by people who would like to connect with a venture capitalist is "What does their plan have to do for you?" What are the performance benchmarks that people are looking for in the venture capital field?

Well, I think if you asked practically any venture capitalist, they'd give you pretty much the same answer. It's not in identifying the factors; everybody knows that the same things are important. It's how you judge whether or not a venture meets this, how you assign, under different circumstances, different weights to things.

First you look for a distinct product, a competitive product, a technical innovation. In the old phrase, a better mousetrap. Then you look to sell that into a large or rapidly-growing market. Third, you look for good management. I think everyone would give you those factors, and they're rarely, if ever, all present in a given situation. You have to either strengthen the management team, or the market's a big question, or it's unclear that this technological innovation can work. But it's how you assess their presence or absence; under some circumstances the presence of extraordinary technology can compensate for an immature market, or a market that's going to be slow to grow, or a management team that's inexperienced.

But that's what everybody does. We focus on another issue that I think most firms don't: we look for an investment and structure the way things are going to work so the biggest risk happens as early as possible. Often this means opting for technical risk over market risk. That is, I'd like to know that if this guy can make this thing, it's good enough so that it really ought to sell. And the reason for it is, first, you can usually prove a technical concept quicker than you can a market. It just takes fewer dollars—it's the first thing we do. And then if it works you've got to gear up for large-scale manufacturing. Then you've got to gear up for large-scale marketing. And if your question is in the marketplace—will the dogs eat the dog food?—by that time you've spent all your initial engineering dollars, then you've also had to raise more money for manufacturing, more money for marketing. You have a big overhead, cash is being burned at the rate of half a million a month, and you're just waiting to see if the market is going to take the product—and there's always reason to think it will, there's always somebody about to order, or somebody really likes it.

So that's an agonizing situation to be in, where you have to fund something at great expense, because you don't want to pull the plug—so it's better, if you can, to do marketing surveys, or a small-scale rollout of the product, something to get the bulk of your risk taken care of quickly on the smallest number of dollars, so if you've got to cut it off you've lost one million, not five million.

Can you give us a real-life story to illustrate that?

We invested in a disk drive company—it's really the best example, but it was so long ago I've forgotten the company's name—we and some other investors put in something in the neighborhood of $3 1/2 million, and nine months later, it just didn't work.

The drive didn't work?

The drive didn't work. And there's nothing to do but go home. Now if the drive had worked, and you'd ramped up manufacturing, and then it turned out that the market required something else, then you would have lost many times more than that.

That happens to a greater or lesser extent all the time. And sometimes it's not so black and white—it works or it doesn't—but sometimes the specs that the unit can achieve, in terms of throughput, in terms of megahertz or whatever it is, isn't just quite enough so it meets a market demand. Or it's a great product, it just costs five times more than the market will pay. It often is not black or white, it's just that the product isn't quite what you'd hoped, and therefore the market opportunity isn't there, or the market opportunity is much smaller, and what you're going to have to do is try to indicate or prove that there's some value, and try to sell it.

If the drive had worked, what might you have spent over the first $3 1/2 million, for the manufacturing and marketing?

Oh, I'd say at least twice as much. Two to three times as much, I think. The kind of companies you tend to be wary of are those which have very long product development cycles, followed by very long sales cycles. This is typical of the telecommunications industry, where you have a very sophisticated piece of gear and it takes you 2 1/2 years. And once you get it, then you've got to play around with the Bell Operating Companies for ages, one, two, three years, and then they give you small orders. So in those kinds of situations, you try to get a broad investor base, so that when you're looking around and they need another $5 million to get through the next six months until the telephone company cuts the order, you're not the only one there.

I would have thought that return on your investment would have been one of your rules, and you didn't mention it.

Well, if the other things are right, that'll happen. Sometimes when you tell entrepreneurs "Build a company, you'll get rich"—if you focus on getting rich, you're not going to build a company. So clearly, in your initial negotiations with the entrepreneur, you have to reach something that's reasonable.

The parameters are reasonably narrow. Things have changed in the last ten years, of course, but a normal first round will be $3 million. Plus or minus a half-million, that'll account for probably close to half of the first rounds.

What does that get you? Basically, if all you're talking about is three people and their idea, it probably won't get you less than half, and probably won't get you more than 65%. Those parameters used to be wider, but basically that's what the deal is, and if it's really attractive, it'll be on the lower end of that range.

I think there's more pricing variability in the second round, when most typically you will have developed the product, you'll have proven the principle or you have something that either you think works, or even better, has been in the hands of a customer who's been tinkering with it and can give the second-round

> **"We look for an investment and structure the way things are going to work so the biggest risk happens as early as possible. Often this means opting for technical risk over market risk."**

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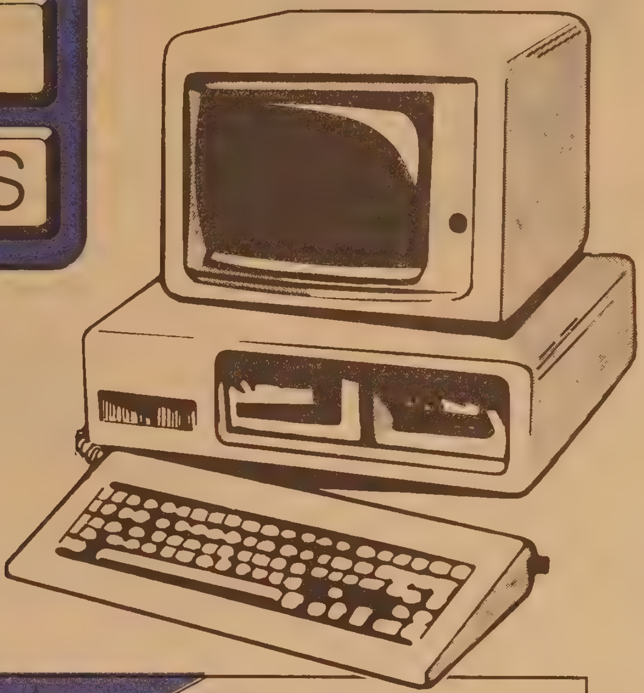

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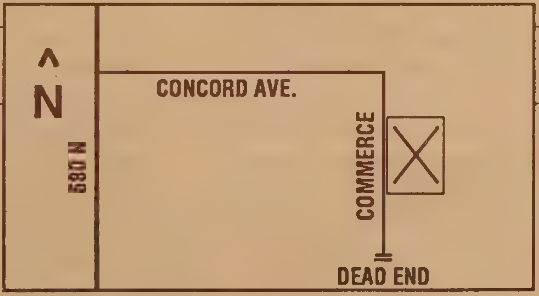

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investor some kind of comfort—"Yeah, it works, and yeah, we'd probably like to buy some." If the first price was $1 a share, those second rounds are anywhere from $1.50 to $4—in fairly heady times, a triple was the goal, but between two and three times is fairly standard. And then the third round is where you have what you might call expansion capital—you've already got some manufacturing and marketing, but now you're really rolling out, and you can see a public offering out there in the distance somewhere. Those are quite variable. What you're doing is figuring what this company is going to go public for, in a year or 18 months, and maybe buying it for a half or a third that. So the first couple of rounds, you're pricing it looking at a rear-view mirror, and the third ones you're looking at "What can this go public for, and what am I likely to get?"

So the goal for the final round is hoping you can either triple or double your money?

In a "third round." Now, that's not our particular market. We rarely do that, unless it's a company that we were a first round investor in. We feel that, one, you make more money, and two, it's our particular skill set and orientation to invest in the first round.

So in general you're not interested in coming in on the third round of companies you didn't invest in on the first round?

That's right. There could be some strategic reason—that a company is so attractively positioned in an important area of technology—that we do it for that reason, but that would be about it. And then it would be in turn so that we could leverage that technology and a relationship with other companies in our portfolio. If there were some particular kind of semiconductor technology that we felt had tremendous applicability toward a wide range of computer hardware, we might come in on a third round. To be able to help our other companies.

So what form does that help take—you get in on the management structure?

No, we have what we call our *zaibatsu*, which is a network of relationships between companies that we've invested in. We've worked that pretty hard, and there's any number of examples where well beyond normal vendor-supplier relationships, these companies have helped each other develop.

So Sun might talk to one set of people, and Sybase might talk to another one.

Exactly. Metaphor and Sybase is an example.

How did that work?

Well, I went to West Point (laughs). Enough said. The president of Sybase [Mark Hoffman] also did, and misery makes—well, one, it loves company, but two, it kind of makes bonds of friendship. That investment was shown to me by a third West Pointer, who's a mutual friend. They were only raising a million and a half dollars, they'd already raised a million, there was only half a million left, and they wanted someone from this firm to go on their board.

Frankly, for half a million dollars, to go on a board wasn't really economical. At that point we had a lot of money under management, and if we went on a board for every half-million-dollar investment, we'd be spread too thin.

So, to make a long story short, they had this relationship with Metaphor. We were a large investor in Metaphor, and Dave Liddle, who was the cofounder of Metaphor, volunteered to go on the Sybase board, both for his own business reasons, but also so that he would represent us, given that he was known to us. That's the way we try to do it—that was unusually neat, and it worked out serendipitously very well. But we sort of like to leverage our time, so Dave has been representing us on the board there for years.

Do you have a preference, when somebody comes to you with a business plan, whether that person's a marketing person or a programmer? What type of background that person has?

Well, given the nature of our business, the chances are he's going to be a technical person. He was in the lab and had some kind of an idea to do something better. The chances are better than even that he's a technical person.

Ultimately the talent that correlates most highly with success is a marketing-oriented chief executive, because once you can make it, the chances are overwhelming that you can manufacture it, and then the battle's won or lost in the marketplace. Often the first battle is won or lost in the marketplace, and then the second battle is lost, or the third battle is lost. You have numerous examples of companies that have an innovation, have a lot of focus, get to market early, have a good success with their first product—Alliant was an example—then the second product isn't there. If you're lucky, you've got the resources—did you raise enough money when things were going well to fund you through a downtime to where you can pick it up again?

Marketing orientation on the part of the chief executive probably parlays more strongly with success than any other thing. So you'd like to have that. Or when you see a technical person—a lot of technical people have a real Elmer Gantry missionary flair about selling their technology, and they can be really effective at it. They're sort of surprised that they can do it, but they end up having a real flair for it. Other times, you just have to make sure you hire a strong marketing person. We're half in the headhunting business. It's probably the single biggest and most important service we provide, recruitment, as well as urging companies to hire—to raise their sights much higher than they perhaps otherwise would, to get good people. Because like so many things, you have to raise your sights so high that you can almost not get that person, as opposed to bottom-fishing.

Getting back to the issue of the marketing-oriented CEO, your colleague Mr. McKenna mentions in his book [*Who's Afraid Of Big Blue?*] that part of IBM's undoing, the thing that made them unable to deal with rapid changes in the marketplace, was that every president they ever had came from the sales department, and there wasn't a technical person in the bunch.

Of course, historically, that's been IBM's main strength, a tremendous marketing strength. It's like most people—their best qualities and their worst qualities are typically mirror images or other sides of the same coin.

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I suspect that in addition to a lack of technically-oriented people at the

"Ultimately the talent that correlates most highly with success is a marketing-oriented chief executive, because once you can make the product, the chances are overwhelming that you can manufacture it, and then the battle's won or lost in the marketplace."

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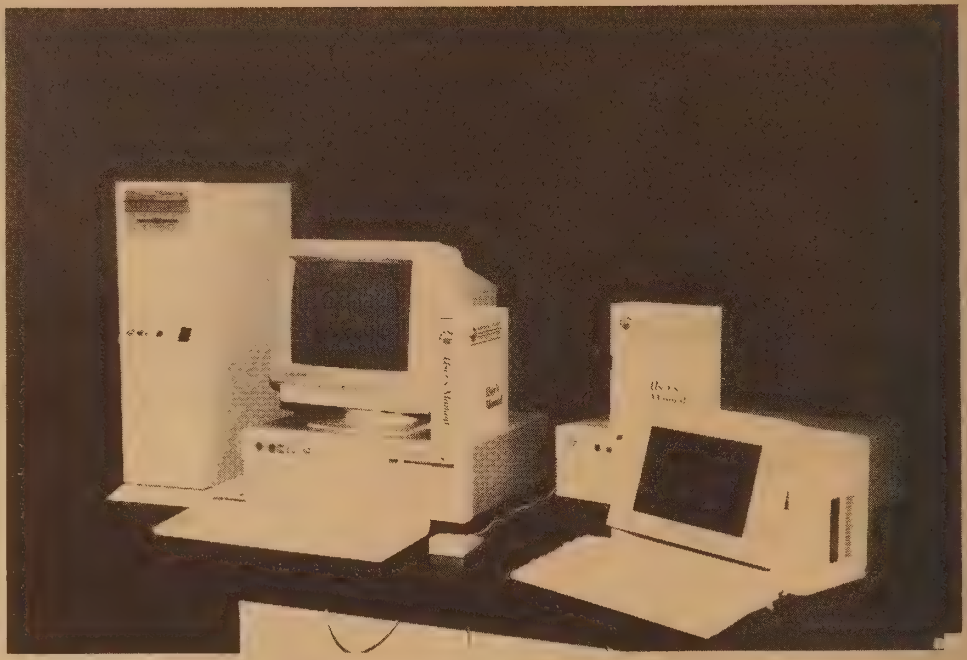

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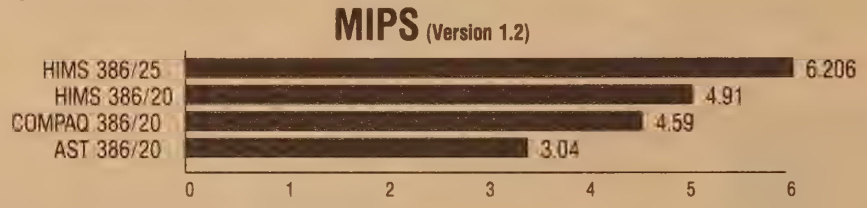

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top, it's that big companies can only move so fast, and they're also tied into certain kinds of standards and compatibility requirements of their existing customer base. And if you're Lotus and you're starting from scratch, you don't have to do that.

What he's getting into, I think, is the contrast between turf wars over existing market share and being truly market-driven in the sense of being genuinely responsive to your customers instead of telling them what to do.

Well, when Tandem was started, I think its principal barrier to entry was that if someone wanted to design a computer to be as efficient as Tandem in that fault-tolerant kind of application, they would have had to use a system architecture and software that was not compatible with their existing system. A startup could do it, but IBM or DEC would have to have designed a new generation of computer, from scratch, that was not compatible with anything their customers had.

And so basically they were kept out of that market for years, because if they're going to go to all that trouble, they would prefer to use those resources to develop a product that they could sell to their customer base and that doesn't infuriate all their customers who wonder why they're going to have to rewrite all their software. So I think the tyranny of previous product history probably hurt IBM.

If you go over the major growth areas of computers, the common denominator is largely that they were done by startups and venture capital-funded. The personal computer business was started by Apple. The supercomputer business, Cray. Minicomputers by Digital Equipment. PC software from VisiCorp and then Lotus.

Was Visicorp funded with venture capital?

Actually, they raised money—they were in our offices here, they raised money at, I think, a $75 million pre-financing valuation.

We were a founding investor in Lotus, but we luckily managed to skip Visicorp. (laughs) They were here, but we decided not to invest.

There are a lot of different kinds of risks in a startup, but one of the kinds of risks there usually isn't is what I'll call financing risks; there's just relatively narrow parameters of what you pay. But once you're paying $75 million for something, in addition to every other kind of risk—risk in the technology, risk in the market—you've got a financial risk, i.e. that you just paid too much. That kind of risk is generally absent, or minimized way early in the process.

So if you spend 10% too much on a $3 million deal, you haven't lost that much, but on a $75 million deal...

Yeah, except that usually in a $75 million deal you can be off by $30 million. It's huge.

Of the companies you've backed, do any of them stand out as a case where you did everything right?

Well, the ones that went the smoothest are the ones my partners did; I didn't have anything to do with it. (laughs) Everything was a breeze, I just got my certificates in the mail.

But I think there's a period in the early '80s when the personal computer business was moving off, and companies like Compaq and Lotus just moved into that slipstream and did amazingly well. Of course, from the inside it's never pretty. You have this wonderful progression of revenues and earnings and so forth, but inside it's just a mess. It's chaos. You hire somebody, and within three weeks he's got ten people working for him. He barely knows anything, and suddenly he's a supervisor, and it's just madness.

You have to be in an atmosphere that forgives mistakes; that is, if your customers really, really want a product, then they just forgive you if you have a disk drive where the heads always crash, or something like that. In America, unfortunately, our methods of product development are—well, the Japanese design it for reliability and for low-cost manufacture, and test the hell out of it, and by the time they ship it it works. The more common pattern in the United States is that you get sort of a breadboarded pre-prototype pre-production pre-everything, and you just kind of ship it out there, and then you move half your engineering resources to the customer's facility, and then together with his staff, you kind of tweak it down the assembly line.

I think in some ways it may be efficient for rapid time to market, I don't know.

A good example was Quantum Corporation, which is a disk drive company. They're a good example of doing it both ways, because they did it the first way with their 8" disk drive, and they were terrific, and then it was just a mess. But to go in and expect it not to be a mess, you're in the wrong business, you're kidding yourself, or you don't know what you're doing.

But then they had a joint venture with MKE, a Matsushita subsidiary that made some gross percentage of all the world's video cassette recorders. They could see that that business was heading south, and Quantum had set up a subsidiary to develop the Hardcard. They felt, of course, being as that was a consumer product, that price would be extremely important—they had to go in and do it like the Japanese do, and we established this joint venture. They went off someplace in the hinterlands of Japan, where there's nothing but the company town and thousands of miles of assembly line, and there these very talented US engineers learned a lot about engineering discipline. Things that were kind of just sloughed off or worked through or fixed on the fly—I mean, excruciating attention to detail—and by the time that product hit the market, probably nine months later than it would have, we didn't get a return. It was just plug and work.

Subsequent products that their OEM side of the business developed were done with a wholly different level of engineering discipline—simply designed for reliability and designed for low-cost manufacture, and thoroughness in testing before it went out. Quantum had a slip back a couple of years ago, but their product reliability is what's gotten them back into Apple—I think they're their largest supplier of 3 1/2" disk drives, and Apple's the largest OEM purchaser of 3 1/2" disk drives.

So it takes a certain amount of guts on the engineer's part and the manager's to get the product absolutely right before you ship it.

Yeah, and in a competitive environment—nowadays when there's twenty 3 1/2" disk companies, and you're the first one, that warm feeling that you get from having your product really perfect is probably not justified when your competitor is out with some other product, beating you to the customer.

In a better world, products would be really ready before they hit a customer, but there's such enormous competition to get to the customer fast, in these enormously short product life-cycle products.

They're obsolete almost before they ship.

Or that you're obsoleting your own product—once your product is in beta site, you ought to be obsoleting it in the lab. Which is really sort of discouraging in a way—you're not even sure whether this product is

> **"If you go over the major growth areas of computers, the common denominator is largely that they were done by startups and venture capital-funded. The personal computer business was started by Apple. The supercomputer business, Cray. Minicomputers by Digital Equipment. PC software from VisiCorp and then Lotus."**

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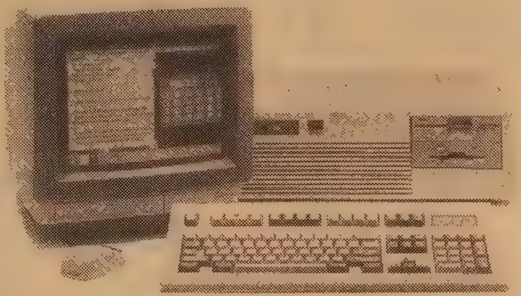

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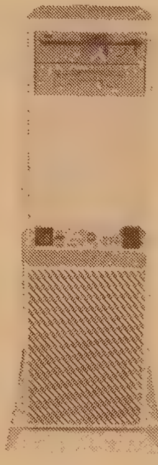
286/12 Basic System $688 w/640 KB Add $40 w/1 MB Add $135
286/16 Basic System $838 w/640 KB Add $45 w/1 MB Add $145

Computer Systems Price Matrix

	No Monitor/Card Included	Mono 720 x 350 1 Color	CGA 640x200 4 Colors	EGA 640 x 350 16 Colors	VGA 720 x 400 16/256 Colors	SYNC 800 x 600 16/256 Colors
88/10						
Basic System	$338	$453	$613	$833	$943	$1,033
w/20 MB HD (65 ms)	$595	$710	$870	$1,090	$1,200	$1,290
w/40 MB HD (39 ms)	$733	$848	$1,008	$1,228	$1,338	$1,428
286/12						
Basic System	$688	$803	$963	$1,183	$1,293	$1,383
w/20 MB HD (65 ms)	$883	$998	$1,158	$1,378	$1,488	$1,578
w/40 MB HD (39 ms)	$1,023	$1,138	$1,298	$1,518	$1,628	$1,718
w/80 MB HD (28 ms)	$1,268	$1,383	$1,543	$1,763	$1,873	$1,963
286/16						
Basic System	$838	$953	$1,113	$1,333	$1,443	$1,533
w/40 MB HD (39 ms)	$1,173	$1,288	$1,448	$1,668	$1,778	$1,868
w/80 MB HD (28 ms)	$1,418	$1,533	$1,693	$1,913	$2,023	$2,113
386/20						
Basic System	$1,448	$1,563	$1,723	$1,943	$2,053	$2,143
w/40 MB HD (39 ms)	$1,783	$1,898	$2,058	$2,278	$2,388	$2,478
w/80 MB HD (28 ms)	$2,028	$2,143	$2,303	$2,523	$2,633	$2,723
386/25						
Basic System	$1,888	$2,003	$2,163	$2,383	$2,493	$2,583
w/40 MB HD (39 ms)	$2,223	$2,338	$2,498	$2,718	$2,828	$2,918
w/80 MB HD (28 ms)	$2,468	$2,583	$2,743	$2,963	$3,073	$3,163

*HD stands for Hard Disk. Monitors manufactured by Mini-Micro (OEM/Samsung). Call for configuratiuons not listed.

386 System



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- *Page Interleave Memory*
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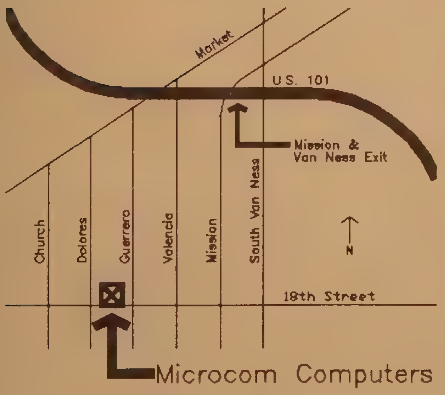
- *1:1 Hard Disk & Floppy Controller*
- *Choice of Teac 5.25" 1.2 MB or 3.5" 1.44 MB Floppy Drive*
- *1-32 Bit, 6-16 Bit & 2-8 Bit Expansion Slots*
- *80287/80387 Math Coprocessor Socket*
- *Clock/Calendar w/Battery Backup*
- *200 Watt Power Supply*
- *Small Footprint Case*
- *Enhanced 101-key Keyboard*

386/20 Basic System $1,448 w/2 MB Add $355
386/25 Basic System $1,888 w/2 MB Add $355

*w/Tower Case Add $100



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Verbatim A Kodak Company
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1.19	3.50″	2.99

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Usually the way things are upgraded in disk drives is that they're made smaller and cheaper. More advanced software requires more memory, which requires more disk capacity, so you used to have 8" drives about this big that had ten megabytes—that used to be the standard around 1980. And now you've got a 3 1/2" that holds 100.

I think one of the things that you're going to see with this increasing miniaturization is that with few exceptions, if a computer isn't quite portable it's obsolete. I think you're going to see this with the Dynabook, a small, fully-functional totally IBM compatible that you can fit inside your briefcase. It weighs about eight pounds. It should be out soon; we hope to be shipping late May or early June.

You've talked about competition on the manufacturing level; what about competition at the venture-capitalist level? Are you locked in combat with other venture capital companies, where you're trying to outdo each other on specific products, or in areas of industry?

Well, clearly the venture capital business is a lot more competitive than it was ten years ago. I think that competition shows itself in two ways, really. First is the obvious way, where you have too much money chasing too few deals, which is going to exert an influence on prices. But as I said, in the startup business the pricing parameter is fairly narrow. So for us it hasn't had a huge impact on the price we pay for investments.

A couple other factors—entrepreneurs, today and over the last five years, have become increasingly sophisticated about the sources of money that they go to. Ten or 15 years ago, an entrepreneur would go get his money; he wouldn't really differentiate between sources, and I think now it's very different, and that most knowledgeable entrepreneurs have a hit list of half a dozen venture capitalists that they are going to go to and that they think will improve their chances of success. Now those aren't always the same six, but three out of the six are pretty much always the same.

So for firms that have been around a long time, that are established, you get the best deal flow, and also entrepreneurs are willing to give you a somewhat better financial deal than they would someone else. Now clearly everyone who comes in at the same time has to have the same deal, but there is pricing flexibility for venture firms that are viewed as having the ability to make a good contribution.

The second thing is that I think the real way that venture capital competition shows itself is not so much in the pricing, as I was discussing, but in the proliferation of new competitive startups, competitive to, say, one of ours.

So you do battle at the startup level.

Ten years ago a startup company would position itself, mentally, competitively, against a large company. It would say "how are we going to get around H-P or IBM or Fairchild?" or whatever it was. And I think in the majority of cases the competitors to a startup are other startups, startups or setups. And that's a big, big change.

I think your chances of being successful drop off fairly sharply from the first startup to the second, the third, the tenth. Your chances of succeeding go down a lot. But sometimes the worst competitor you can have is a desperate competitor—they can just create confusion in the marketplace, competition for people, resources, mutual bad-mouthing—it's that level of competition that's made the venture business a tougher place.

What do you do with a desperate competitor?

First, we try to be the first one. We don't want to be in the clone business. If you're the first one, you try to make sure that a company's extremely well financed, then you try to use all your resources and positioning to be able to attract good managers. Not often, but occasionally, if we're taking a manager away from an established company, we as a partnership might have to give him a soft landing commitment; that is, "If this doesn't work, come in, work in our offices, we've got some satellite offices, work on another business plan. Work there until you've found another deal—we've got over 100 companies in our portfolio."

So we use our resources to attract the best people, finance them extremely well, try to work the *zaibatsu* in terms of corporate relationships—instead of building a fab, have LSI Logic do this. Get Sun to be a beta site. Kind of work things so that you can

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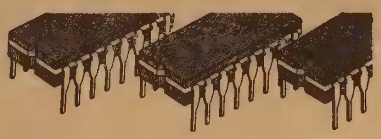

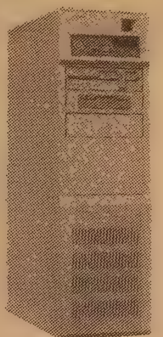

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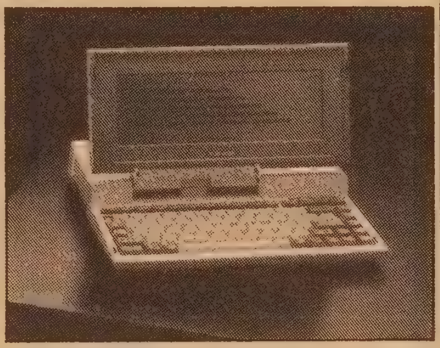

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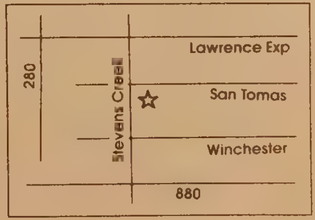

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It's a competitive world. If someone else is out there, you just have to kind of live with it.

Are you involved with Wyse?

I was. I resigned from the board at the end of last year.

So some of the trouble they're going through you can look at from a knowledgeable perspective.

I can look at it with knowledgeable eyes.

You were involved with Compaq, a clone-maker in the highest sense. And then there's Wyse, which didn't do well at all. What was different?

First of all, Wyse wasn't in the PC business, Wyse was in the terminal business. And we invested in Wyse when it was in the middle of a $5 million year, and I guess they didn't get into the PC business until they were over $150 million in sales.

The general thrust in electronics and information sciences is that ultimately everybody's competing with everybody. But it's our policy and practice that we don't fund direct competitors. Now sooner or later, Sun will compete with Compaq. There's only so much space on the desk, after you take your feet off it. (laughs)

So did you think Wyse's decision to go into the clone business wasn't a good way to go?

Well, I was really leery, but the real hurdle that we perceived was the broadly advertised, broadly retail-distributed approach—it takes millions and millions and millions to establish a retail franchise, a consumer franchise. It was the theory that we would basically be a dealer's product and just sell with basically no advertising, utilizing our low-cost offshore manufacturing ability. Obviously for a while it did pretty well. I think the problems were less in the theory than in the implementation.

From the standpoint of the archetypal person in the garage who's got the world-changing idea, what's the best way to shop for venture capital?

Well, typically, if he's located in Lawrence, Kansas, he's probably in trouble. It just takes more work. He might call the National Venture Capital Association in Washington DC and ask for the directory.

But if you're out here, or if you're in Boston, it's all around you. What you do is go to one of your neighbors who's done this before, and ask him "What do I do?" The second thing you'll do is you'll go down to get incorporated—there's probably less than half a dozen law firms that totally dominate that sort of high-tech lawyering business, and they've got a patter they've repeated so often they could do it in their sleep about "This is what you do, this is what you don't do, this is how you leave your employer, and here are half a dozen of the usual suspects in the venture capital business."

Can you name a couple of those law firms?

Sure. In no particular order: Wilson Sonsini, Brobeck Phleger and Harrison, Cooley Godward, and Ware, Fletcher and Freidenrich. I think those four—I don't know how you measure market share, but if I had to pick a number out of the air I'd say the four of them have 80% of the market. Palo Alto is sort of the Peninsula nexus of all that.

Venture capital firms seem to specialize in certain types of companies.

Out here, because Santa Clara is right down the road, the general specialization here tends to be early-stage high technology, because that's where people came from, and half of the partners of all the firms around came out of Intel (laughs). They have that knowledge of technology and of markets and of people.

Nationally there's a broader specialization, but here—US Ventures has an arm that's run by Phil Schlein, who used to be the head of Macy's Northern California, which specializes in speciality retailing. A lot of the firms have biotech activities, as we do. Genentech was a company we started. The president of Genentech was an associate here; he left to start Genentech.

How close to the beginning of your firm did that crop up?

That was funded in '76. We were founding investors of Hybritech, Applied Biosystems, Liposome Company, Home Health Care of America, which later became Caremark, so we've been active right from the beginning.

One product I was quite fond of died a quick death last year, and I asked a venture capitalist friend about it. Product seemed good, marketing bad, and he agreed. He said it was a bad venture capitalist firm, which made me think that we don't know

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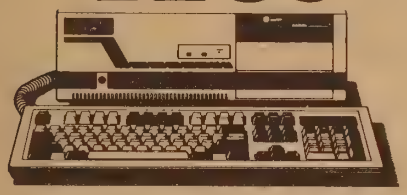

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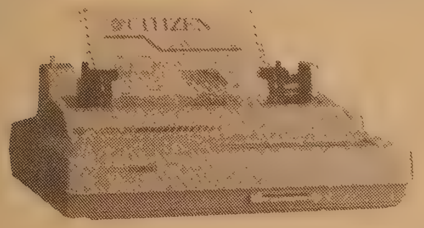

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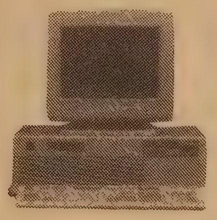

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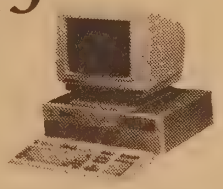

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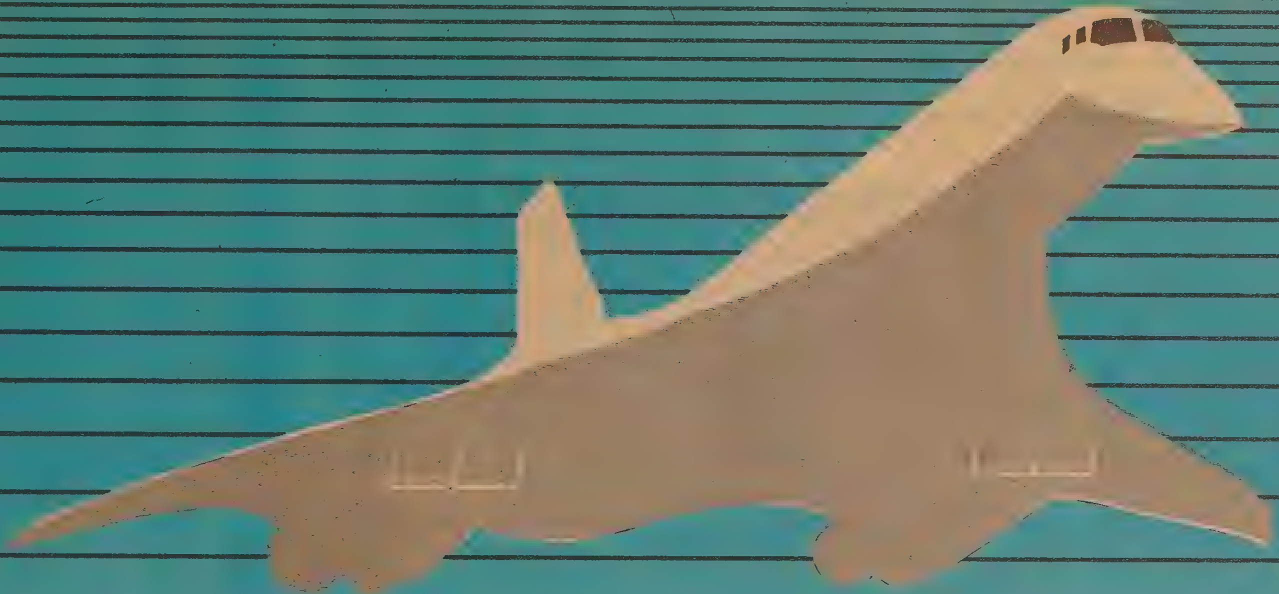

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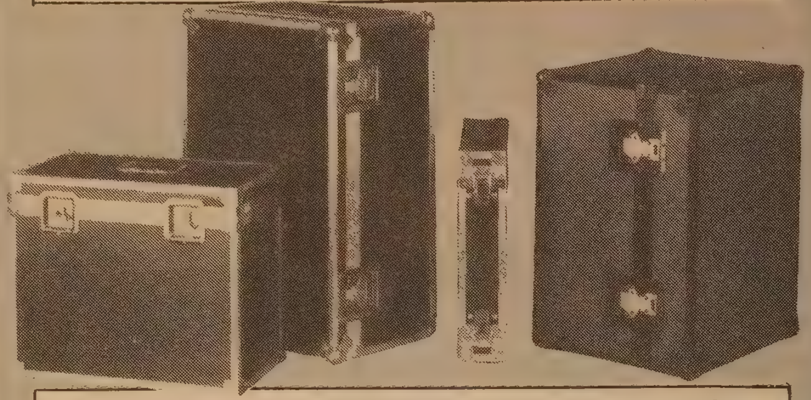

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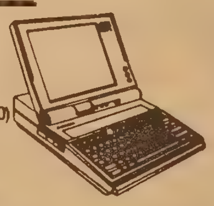

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nearly enough about how much a venture capitalist can positively or negatively affect a company. Can you give an idea what a bad venture capitalist might do?

I would think that a bad venture capitalist would commit mostly sins of omission. That is, not help them do the right thing, and maybe give them bad advice.

If anything, there's a whole bell curve in the abilities of firms, and it's important to not only pick the right firm, but to pick the partner within the firm.

Does an entrepreneur have that choice?

It depends. Let's say there's somebody that's raising $4 million, and he's raised most of it, and he will maybe raise a little more than he thinks he needs, in order to accommodate you, and then you think this is a real hot opportunity—then he can ask.

But in general, they can't really ask?

He might ask, "Who'll be following this?" Or "Who'll be on the board seat?" and then people might ask him who he wants. As opposed to when you buy a car, and as soon as that sucker drives off the lot, you never see the salesman again, this is somebody you're going to spend an excruciating amount of time with.

It doesn't happen so much anymore, but there used to be what we out here called the East Coast venture capital style, which was much tougher on terms, much tougher on covenants, inclined to do tough convertible debenture deals rather than a toothless preferred stock deal, and who from the start acted more in an adversarial than a partnership way. Those people generally went out of business, because they found out that the entrepreneurs and the venture capitalists spent more time fighting than trying to move the project forward. Most of those people haven't been in the business for years.

And some people are more difficult to work with than others, but maybe they make up for it because they're particularly talented or whatever.

But to me a bad venture capitalist mostly is just going to give bad advice like "Oh, the price is too low, let's not raise the money." Or, if the management wants to go out and raise money at ten bucks a share but seven might be a price at which you can get the deal done, not insist that they try to raise money at the lower price, but then they go out and shop around at ten dollars a share and not get anywhere, and the deal's sort of dog-eared, shopworn, and the company runs out of money and then has to raise money at five. People who just have bad judgment and bad vision—"Let's defer hiring a marketing manager." You can give tons of advice. You can give good advice or bad advice. I haven't heard too often about people taking really positively or overtly destructive actions. That's sort of an unusual thing.

It is a word of mouth business, and it takes you many, many years to build a good reputation. Doesn't take you too long to shoot it down. So I think people who behave that way consistently would find themselves kind of way down on the food chain looking at the marginal deals that couldn't get financed anywhere else.

If you're shopping for venture capital and have a choice of several companies, aren't you likely to go for the firm with the track record and the full range of services?

That's sort of what we do for a living, is try to, one, do it, and then use that in our marketing. The entrepreneurs try to sell us that we should invest, but basically everybody's selling. We try to sell them that we're the best source of money for them.

Is it still possible to do a Compaq, a Sun, a Lotus from scratch today, or is it mostly a world of niche markets now?

We view it as our job to swing for the fences. Starting small potential little niche companies might be kind of your bread and butter—I mean, you've got to hit singles. But in the end, what is going to differentiate us as a firm from others in terms of the contribution we generally make, whether it's to the economy or to the society and the differentiating financial returns, can be if we have companies that don't make us five times what we invested, they make us fifty times, and that you start a major entity that'll be a long-standing, standalone piece of the American economy.

So I think that's basically why we ought to be in business. There have been times, prior to the wave of semiconductor startups, when people said there'd never be another semiconductor startup. They're capital-intensive and it was just too high, it cost $100 million for a fab, etc. But technology changed in terms of computer-aided design, and everything that you know about, and it did be-

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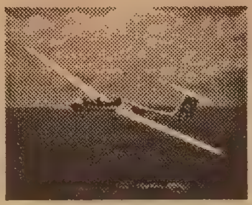

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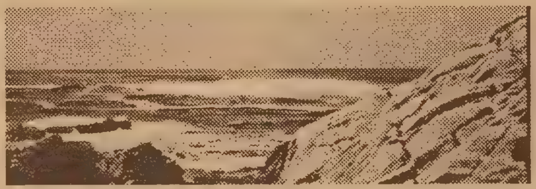

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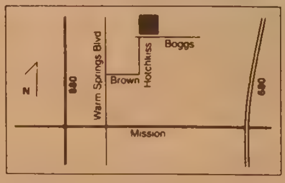

come possible.

People talked about how there'd never be another minicomputer company; Tandem is that. Could you start another pharmaceutical company? You've got Lilly and Merck—but biotechonology came along and you can. Now you may ask again, can you start another major biotechnology company, because the FDA hurdles are so immense for a therapeutic that it takes, most people say, ten years and $100 million. That's probably a slight exaggeration, but you're talking those numbers, and if that's true, it's decreasingly a small-company opportunity. But the rate of technological change is not slowing. It's, if anything, accelerating.

The microprocessor becoming ubiquitous, I think, funneled a whole raft of things. I think everything—from voice recognition to the miniaturization of everything to increasingly powerful processors, cheaper memory, more user-friendly software—is going to expand markets pretty dramatically. I think you're going to see the integration of televisions and computers—once you have a high-definition television, it will have the bus structure, the memory, most of what you need except the keyboard, for a computer. Once you have a high-definition television, the incremental cost to make that a computer is negligible. It's like where something might cost two dollars and something might cost two dollars and you put it together and it costs four dollars, except in this case something that cost four dollars and something that cost four dollars will cost $4.50. There's not much extra cost you'd have to add into it.

The Dynabook opportunity—that's certainly nothing if not a swing for the fences. If that company goes it'll be a big company; if it doesn't, it'll be a very, very, very small company.

Isn't Sun, for example, an example of a company that made it after everyone said there was no chance for another company to come in?

That's right. Apollo was there in the workstation business already.

And everybody was saying, "That's it. We're done..."

I think if there's something mildly discouraging to me about the business, it's that after two or three bad years you have a lot of venture capitalists saying, "Well, we've got to diversify. We'll do later-stage rounds, we'll do leveraged buyouts, we'll do specialty retailing, we'll do whatever." And it's not that those can't be good businesses; leveraged buyouts are great, and people have made money in all of those.

But basically, in the entire world there's only one thing that only goes straight up, and that's technology. Human nature has cycles, history has cycles, economies have cycles, nations have cycles, everything has cycles. Technology hasn't had a down cycle since the ninth century. When Rome fell, maybe from 500 AD till 1000 AD or the Renaissance or something, technology kind of drifted. But since about 1000 AD, it's only gone straight up.

> **"There's a whole bell curve in the abilities of venture capital firms, and it's important to not only pick the right firm, but to pick the partner within the firm."**

So your bet is that that's the place to be, for you and your company—technology as opposed to getting into this other stuff.

Well, first of all, even if that were not the place for us to be, it would be like if you have someone who's a dancer and say, "Dancing isn't the place to be; you should be a painter." Well, (laughs) unfortunately we're not painters. So I think it's both what our skill set is, what our interest is; we also have a franchise—I could go out and try to beat it with a stick and I couldn't kill it. Also, as a partnership we're working pretty effectively—we've got things in a good balance, and we've just raised another fund, so...

You're in it for another couple of years...

(laughs) Right.

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I bet some venture capitalist is talking to those guys in Utah about cold fusion right now.

I can guarantee it.

Are you one of them?

Yeah. If it's going to be that big, even if we don't get in, at least we'll get a front-row seat.(laughs)

We're involved in, I'd say, the two highest-potential superconductivity startups—one is called Conductus, and it's, again, part of the *zaibatsu.* The head of development for Stanford University called us, and informed us of what their people were doing, And we and two other venture capital firms basically funded this. It was the first startup I know that, when it was funded, had no employees. The scientists were there, but they were at Stanford, and we were there with our checks, and then our job was kind of to put that together. This involves Stanford and Berkeley.

Then there's the other, I think, highest-potential one, aiming at different applications of the technology, one that's based out of MIT. It's called American Superconductor.

It seems that the Japanese are making greater strides in superconductivity than their American counterparts. Is that the case?

I guess the answer is I don't know. I have no idea where Japanese research efforts stand *vis a vis* American research efforts. I guess the stereotypical view of the situation is that Americans innovate, the Japanese acquire the technology, and then they manufacture efficiently. I think in the long run it would be easier for us, or at least as easy for us, to become efficient manufacturers as it will for the Japanese to learn how to innovate.

I think it would be helpful if we stopped innovating and basically giving it away. There's a lot of talk about pirating of technology, but basically the Japanese have had to do very little pirating. The bulk of the American technology the Japanese have, the US companies have openly sold them at disastrously, ludicrously low prices—the $25,000 license that AT&T charged Sony for the transistor set the stage.

The Japanese semiconductor industry is the creation of, the creature of, the US semiconductor industry. It didn't start up on its own. We created it. We put them in business. TI basically not only cross-licensed all their patents, but sent their engineers over there to make the processes work. I mean, it's a series of such staggeringly arrogant and short-sighted decisions—you keep thinking "There must be something that I don't know in this picture."

I'm on the board of advisors of a Japanese venture capital firm; it's not a competitive firm with ours, it's a firm active in Japan. It has raised money from US investors and invested it in Japan. I did it primarily to learn what was going on there; what I did learn is that the venture capital business in Japan and the US have nothing in common—it's a totally different kind of activity, and precious little technical innovation goes on in small companies; it's a large-company activity. This firm—it's called Jafco, it's a subsidiary of Nomura, it's by far the largest venture capital firm, in fact it defines the venture capital industry in Japan. It's like 70% of the market. They do virtually all low-tech investments. The new generations of robotics and optics—those are happening internally to the large companies.

Because the large companies have the money to spend without worrying about it?

Yeah, except my own opinion is that even the innovation that is done there is what I would call evolutionary innovation, and still the overwhelming amount of innovation takes place in the United States. I think we could do a lot better, from the Eureka!/Come Here Watson stage; we could do a lot better from that point on.

But that's not where our problem is. Our problem is commercializing that, and also not selling it to the Japanese, not licensing it to the Japanese, at real low prices.

It seems like the thing that's missing is the industrial giants like J.P. Morgan who put together all those big deals in the last century.

I don't think so. Well, that of course was US Steel, Big Coal, Big Steel—but when the Bessemer furnace came out, that was high technology. It was really a revolutionary way to do things. You've had your old-line venture capital firms, the Rockefellers, the Whitneys—I think JP Morgan was less someone who funded innovation than someone who took large companies and created even larger monopolies. He understood monopoly pricing, market share; he was a real economist.(laughs).

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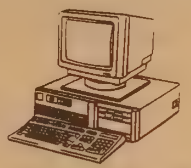

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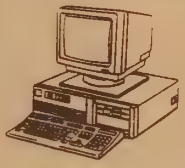

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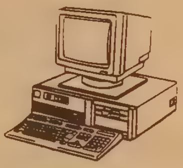

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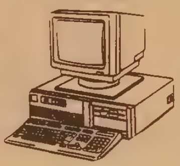

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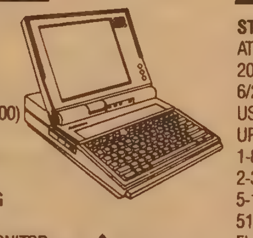

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Is there anybody among the entrepreneurs out there that you really admire? Who do you set your sights on?

The two gentlemen I think are probably the highest quality entrepreneurs in the broadest sense are Gordon Moore of Intel and Paul Cook of Raychem. In terms of their technological contribution, their personal leadership, their personal qualities. I suppose Hewlett and Packard are kind of like the godfathers of that, but of course that company was started in the '30s. From what I've seen, Gordon Moore and Paul Cook probably rank next in the pantheon, in my opinion.

When it used to cost a million and a half dollars to start a company, you got between 50% and 65%; now when it costs three million to start a company, the tyrannny of those numbers is pretty inexorable. One of the reasons is, I think, that the pattern of bootstrapping a guy in a garage that works for $20,000 a year, works for a year and builds a product—that pattern barely exists any more for two reasons.

First, entrepreneurs are largely not willing to make much up-front financial sacrifice. They like to come on board even and maybe with a risk factor adjustment. I think maybe the fact that capital gains are taxed at the same rate as ordinary income makes them more current-income oriented. When something was taxed at 50% versus 20%, you'd be willing to make some current-income sacrifices for opitions, but now it's all taxed the same. So pretty soon you're moving into pretty nice offices—I mean, you don't have Monets on the wall yet…(laughs)

Second but more importantly, in that competitive environment I talked about, where other venture firms are starting competitors, you can't afford to bootstrap a guy on $200,000 for a year at a real low-cost, low-key effort to develop his prototype. Which you might have done ten years ago, and hell, then you'd own a nice slug of the company for a small amount of money. Now you can't do it, because as soon as someone hears about your project during that period he'll leapfrog you. So the competitive environment has ratcheted up the amount of money that has to go into a company. So that affects returns a lot.

It's like bidding for ballplayers.

Yeah, that's right. (laughs) Sometimes almost the same entertainment value.

When I asked who in the industry you admired, the group I expected you to be picking from was Gates, Jobs, Kahn, Kapor, or any of these guys, and you picked a generation earlier. Have these guys not proven it to you yet?

No, I think the reason I did what I did was that if I picked any of the generation that you describe I'd be, perhaps, offending someone by omission. And second, none of those people of the newer generation could, if they knew them well, help but agree with me.

> "In the entire world there's only one thing that only goes straight up, and that's technology. Human nature has cycles, history has cycles, economies have cycles, nations have cycles, everything has cycles. Technology hasn't had a down cycle since the ninth century."

Chou En-Lai was asked shortly before his death in a wide-ranging interview whether he thought that the French Revolution had been a good thing. And he said, "Well, it's too soon to know."

You know, there's always time to crow. Premature crowing is a real waste of time, and premature picking of this generation's entrepreneurial icons—it's just too soon to know. ■

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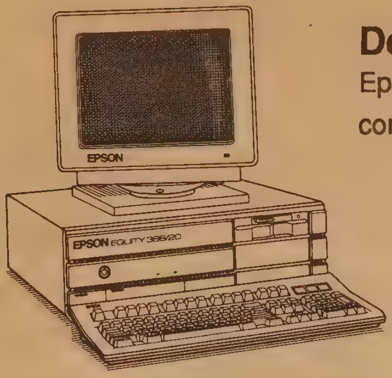

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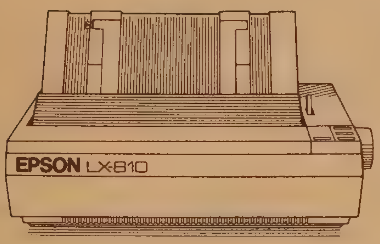

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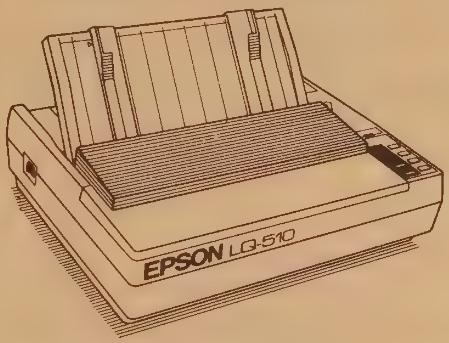

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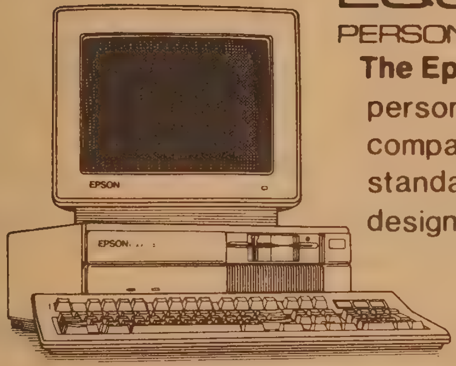

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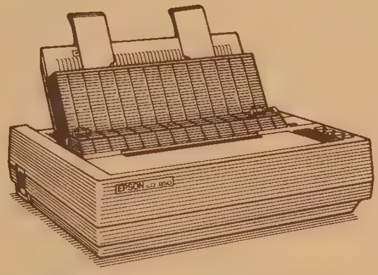

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Venture Capital Firms: A Survey

Venture capitalists. They decide if, when, and where tens and even hundreds of millions of dollars are invested.

If the world of venture capital seems intimidating, the following interviews could help dispel that feeling. We talked with representatives of ten venture capital firms in California and asked them to explain what they do and how they do it. Each spoke candidly about firms they've invested in and the kinds of deals they like to make and with whom. They talked about what it takes to make a start-up successful, and how to tell if an idea or a company is likely to succeed.

If you're considering approaching a venture capital firm to get your entrepreneurial plans going, the following may help you prepare for that initial meeting and understand the world of venture capital.

—Tony Rocco

**International Daleco
Technologies Corporation
Michael Dale, Executive
Vice President
3380 Via Lido, 4th Floor
Newport Beach, CA 92663
(714)673-4227**

What sorts of ventures does your company specialize in?

Our financing is completely different than most venture capital financing. We focus on an area called marketing limited partnerships. We come in and provide off-balance-sheet financing for the marketing and advertising for corporations. We're not restricted to any one industry, but if you were going to pick criteria, generally companies that are very market driven, software companies, pharmaceutical companies, companies that spend a lot of money on marketing and have fairly high gross profit margins. At a minimum we like to see companies that are doing two million in revenue and are profitable.

What distinguishes your company from other venture capital firms?

Our financing is off-balance-sheet, which means we don't create a debt on the balance sheet of the company. The company has less dilution, it has to sell less stock using our kind of financing than traditional venture capital financing. As far as we know, no one does what we do.

So we're a complement to other types of financing because we come in and specifically raise money off the balance sheet without creating a debt with a focus on the advertising and marketing dollars that are spent by that company.

What do you look for in a company when you consider investing in it?

We look for unique, proprietary products that are very market driven. Obviously we're spending and raising capital in the marketing area, and we want to see effective use of our moneys we are raising and also see a return to our investors. Primarily the characteristics we look for are market driven, high gross margin, proprietary products.

How often do you raise investment funds?

Continuously. We're constantly in a capital-raising mode.

How should someone approach your firm for venture capital?

What they do is contact our office. If they're doing two million in revenue and they have high gross profit margins, and they're market driven, they should call our office and we'll talk to them. We'll probably need a business plan, that's typical.

**Norman Goldfarb
3000 Sand Hill Road Building 3 #225
Menlo Park, CA 94025
(415)854-2204**

What sorts of ventures does your company specialize in?

Real early stage, seed-type, no particular industry specialization. I try to keep a real open mind. High-tech seems to be the most interesting. I make one investment a year; I've been working for three years now. I've got two high-tech investments and one in the consumer financial products area, which is high tech in a sense but certainly not electronics type high-tech.

What distinguishes your company from other venture capital firms?

Probably my experience in starting a company from scratch. I take a real active role and I make one investment a year.

What do you look for in a company when you consider investing in it?

They should be something really special that will enable building a real important company around it. Every company has its strengths and weaknesses, and I try to look for some set of things that are really special, whether it's proprietary technology or a super management team or a terrific market—whatever it is, or a combination of those.

How often do you raise investment funds?

I just invest my own funds so I don't raise funds.

How should someone approach your firm for venture capital?

Call me.

**New Enterprise Association
Lynn Dennard, West Coast Office Manager
235 Montgomery St. Suite 1025
San Francisco, CA 94104
(415)956-1579**

What sorts of ventures does your company specialize in?

High tech, low tech. Computer software, biotech, specialty retailing, financial services.

What distinguishes your company from other venture capital firms?

We operate on a national basis. We have offices in San Francisco, Menlo Park, southern California, Baltimore. We have affiliated funds that invest

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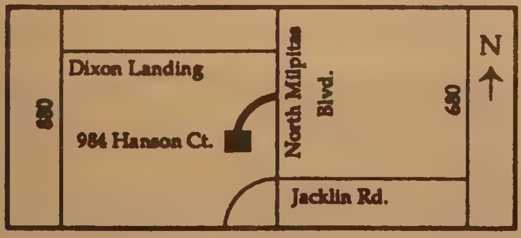

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in specific areas. For example, Spectra Enterprise Associates is our affiliated fund that specializes in investing in defense electronics.

What do you look for in a company when you consider investing in it?

Obviously the potential return. We look very closely at the people involved. And the proprietariness of the product. Is it something that's new, is it something that no one's seen before? Will it change the way the world thinks about whatever it is?

Is your firm a first, second, or third round investor?

All of the above. We go from seed to the end.

How should someone approach your firm for venture capital?

Please don't call. They should send us, ideally, a copy of the executive summary of their business plan. Or something that indicates what it is, who the people are, what their backgrounds are, that sort of thing.

Mark Wilson, General Partner
Technological Venture Investors
3000 Sand Hill Rd. Building 4 Suite 210
Menlo Park, CA 94025
(415)854-7472

What sorts of ventures does your company specialize in?

High technology, primarily electronics based. And deals that are first or second round.

What distinguishes your company from other venture capital firms?

The partners that are involved with deals have an excellent track record working with entrepreneurs to grow successful businesses. We offer not just experience but success. We've been around since 1980 and we have something like 20 companies that have gone public. We have companies like Microsoft, Sun Microsystems, Adaptek, Archive, more recently Vitalink, Altara, Linear Technology, a whole list of companies. And we have success in a broad area: software, hardware, CAD, peripherals... [we have] a broad base of success in a broad number of industries in the electronics related computer area.

What do you look for in a company when you consider investing in it?

The quality and spirit and drive and cohesiveness of the management group, the entrepreneurs.

What about the product?

What we find is that the product is not as good a distinguishing factor. The only thing you can say about the product is that its market potential has to be enough to grow a substantial business. We're more interested in the product being a demonstration of a base technology. So it's more than a one-product company but a potential [that exists] for a line of products or a line of enhancements based on a fundamental technology. A proprietary technological edge is important.

How often do you raise investment funds?

We've raised four partnerships [since 1980].

How should someone approach your firm for venture capital?

Send us a business plan. We look at all the plans. Don't call. Most of the people have a stack of phone messages, so the ability to return phone calls is limited.

Lucien Ruby, General Partner
Quest Ventures
555 California St. #5000
San Francisco, CA 94104
(415)986-1647

What sorts of ventures does your company specialize in?

Early stage. We've done a couple of software companies. We've done a couple of biotech related companies in genetic medicine. We've done a mechanical connector for tubing and pipe, which sounds kind of boring but is pretty exciting.

Can you name names?

Lock Ring is the connector company. Chang Labs, Bowers Imaging Technology, which is the technology that makes gigantic images, billboard size images, at extremely high resolution.

What distinguishes your company from other venture capital firms?

We will do real early stage investing. Somebody without a business plan, we'll spend time with and help them do it. For instance, we have an entrepreneur in our office right now who is starting a biotech company. He's been using our office for about six months now putting his business plan together and all that.

We know what a successful looking start-up looks like. And our job is to help put the pieces together to see about that, so that somebody with an idea gets off the ground.

What do you look for in a company when you consider investing in it?

What we really want is to be able to answer this question in the affirmative: If these people or this person is successful in the task they've set for themselves, will anyone care? We want our investments to be doing the right thing. The way to make money is to do the right thing at the right time.

For instance, we're looking for things that have a distinct need in the marketplace or have a distinct advantage. Most venture firms are looking for proprietary or an unfair advantage, as some people say. Or something that has a proprietary technology or some leg up on the competition. And they want a great management team. And they want reasonable evaluation and a very good business plan. We will help people find the management team. We will help people put the business plan together and those kind of things, but we want to be sure that what this idea is is something that if it's successful, the marketplace is going to be excited about it. We need to convince ourselves that if they did it right, there'd be a place for it in the market.

How often do you raise investment funds?

Our fund-raising process is agony. We have to go and plead and beg and chase down leads for people who could care less if they invested in you or not. It's pension funds and endowments and rich individuals. We raise a fund every few years.

How should someone approach your firm for venture capital?

The best way is to write me or my partner a letter. His name is Bill Boeger. Write either one of us a letter that explains in two pages what you want to do, why you want to do it, why you're the person that ought to be doing it, and what kind of resources you need.

Bill Younger, General Partner
Sutter Hill Ventures
2 Palo Alto Square #700
Palo Alto, CA 94306-0910
(415)493-5600

What sorts of ventures does your company specialize in?

Early stage technology companies almost exclusively. We just started a database tools company called db Software in Palo Alto. SuperMac, we invested in the buyout of that company from SMS (Scientific Micro Systems) last summer; Banyan Systems, the networking company in Boston. Those are some recent companies. We were the lead investor in Apollo, Quantum, Qume, Diablo Systems.

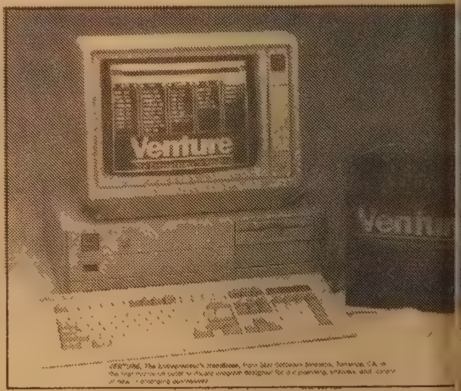
Venture Capital Resource Guide

Venture Capital Directory

An on-disk directory to venture capital firms and financial advisory and consulting firms. Files are in ASCII and PC database formats. Gives information on each firm including what industries it invests in, preferred stages, and preferred investment range. Infoprobe, 620 Iris Ave. #229, Sunnyvale, CA 94086. (408)730-4636.

Venture—The Entrepreneur's Handbook

A software system for the entrepreneur who needs help writing a business plan. Its Business Planning Module, developed by faculty from the USC Business School Entrepreneurship Program, uses a question-and-answer format to create all the phases of a business plan, from an Executive Summary to Contingency Plans and Financial Requirements. Also includes integrated modules in word processing, spreadsheet, file management, and double-entry general ledger. ($349) Star Software Systems, 363 Van Ness Way, Torrance, CA 90501. 1-800-242-STAR.



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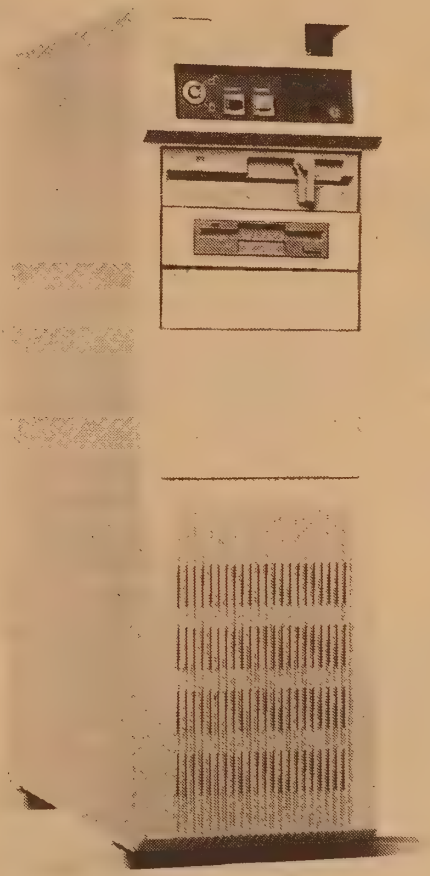

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What distinguishes your company from other venture capital firms?

We've been focused on the high-technology business start-up for 27 years and no one else can claim that.

What do you look for in a company when you consider investing in it?

We've had about 15 companies in our history where we've made better than 50 for 1. And we've had about an equal number of write-offs. And the really successful are differentiated from the unsuccessful ones by two things: one is outstanding people or an outstanding person who gets it started; and second is a product that can dominate a niche. So they have to define their market so that they can dominate it, but not so narrowly that you find out you don't have anything.

How often do you raise investment funds?

We have a pool of money, a little over $100 million, that we have available to us from our limited partners. So we just invest that as the need comes up. We raise funds every four or five years, but not for an individual project.

How should someone approach your firm for venture capital?

Call me or send me a letter.

Bob Loarie, Partner
Weiss, Peck & Greer
Suite 202 2100 Geng Road
Palo Alto, CA 94303
(415)856-6864

What sorts of ventures does your company specialize in?

We are diversified. However, two-thirds to three-fourths of what we do is typical high tech sorts of stuff. We also do service businesses including retailing, insurance, and a variety of other things from time to time.

What distinguishes your company from other venture capital firms?

The thing we like to bring up in that regard is that our directors are all fellows with significant, in-depth industry operating experience. You shouldn't be in the business if you haven't got that these days.

What do you look for in a company when you consider investing in it?

We are primarily in on the early stage start-up situations. And so what we look for is an opportunity to really build a substantial sized company relatively quickly. Which requires a pretty decent market for whatever its products are, yet a growing market. It's difficult to pound yourself into a piece of market that's not growing. The best possible situation is a new and rapidly growing market where we have a reasonable shot at being among the early major players in that market.

We also have a fair amount going on at the other end of the spectrum. I'm talking about established companies that haven't had professional investors before, where we can own a significant piece of the company and help them implement a new strategy. We've done several of those and hope to be doing more.

Would that be a company that's not doing too well?

It could be a turnaround situation, it could be a buyout, for that matter.

Informal Investment Networks

An Alternative Approach To Early-Stage Funding

As the formal venture capital industry becomes increasingly competitive and increasingly selective about what meets its investment criteria, it's becoming harder for niche-oriented start-ups or entrepreneurs whose ideas are at relatively early stages to obtain funding.

One innovative response to this problem is a growing number of informal investment networks nationwide. According to Michael Levy, of the Cambridge, MA-based consulting firm Technology Strategy Incorporated, such networks usually consist of smaller investors and use a variety of approaches for matching investors with entrepreneurs.

Perhaps the longest-established and best-known of these networks is the Venture Capital Network, founded in 1984 by William E. Wetzel of the University of New Hampshire. It's a loose affiliation of smaller investors who directly invest in the enterprise themselves, and operates in a manner very similar to a computer dating service. Investors and entrepreneurs pay a registration fee, after which investors submit profiles describing their investment criteria and entrepreneurs submit profiles detailing their business plans and financial projections. Anonymity is preserved until matches are made.

"Essentially," says Levy, "they invest in a deal that interests them. The network has some visibility, so people know to go to it to raise money. They also know to go to it to get some kind of association where they can get to see a deal flow without being a limited partner in a venture capital network, and they won't be bothered by crazy people looking to finance perpetual motion machines."

Levy is in the process of setting up such a network, still in the early planning stages, to link investors and entrepreneurs in California and Massachusetts. While the particular approach a network takes may vary from the anonymous-dating-service model to one involving much more personal screening and hands-on involvements, there are, he said, some important considerations to keep in mind in setting up such an organization. Most significantly, strict federal and state laws restrict who can act as investment advisors, and such networks must avoid giving recommendations or advice as to the merits of a particular investment. (VCN, for instance, terminates its role once an entrepreneur and investor meet, regardless of the ultimate outcome.)

For the small or early-stage company, this approach can offer more flexibility and timely support than the conventional venture capital option. Says Levy, "You're really not trying to compete with the venture capital people. Mostly, I think, the investments that are made by individual investors and networks come at the prototypical stage, usually a little earlier than formal VC people want to get involved in it. Maybe the concept hasn't been proven, and if it works it's great, and if it doesn't it doesn't.

"Once it gets past that early initial stage, it may be a candidate for venture capital, and then again it may not. The standards that the VC people have to use are that they're looking to create a company of considerable size—the classic rule of thumb that you hear is 'Is your idea, market, etc., sufficient to support a $50 million a year company?'

"Now, many of these deals are flawed to start with from the standpoint of venture capital—either there's not a management team or it doesn't have the right experience or the market isn't proven or any number of things that would disqualify it from the consideration of formal venture captial. Or they may be smaller companies that wouldn't be eligible in the first place because they're niche markets or they're not large enough.

"Or they wouldn't give the right return on their investment, which is an issue for a VC company, because they have significant constraints. They get their money from people who want a fairly hefty return on investment. One of the few places where you can get this kind of return on investment is in high-tech investments. You can get a very hefty return on real estate, but not enough to suit a venture capital company, because they promise a return usually in excess of 25% internal rate of return to their investors, which is pretty high.

"Also the people who tend to invest in these things are not under the same gun of having to produce that kind of IRR, so they can basically invest the same amount of money, but, for instance, take a longer time."

—Mary Eisenhart

Resources:

Venture Capital Network, Inc.
P.O. Box 882
Durham, NH 03824-0882
(603)743-3993

Michael Levy
Technology Strategy Incorporated
6 Bigelow Street
Cambridge, MA 02139
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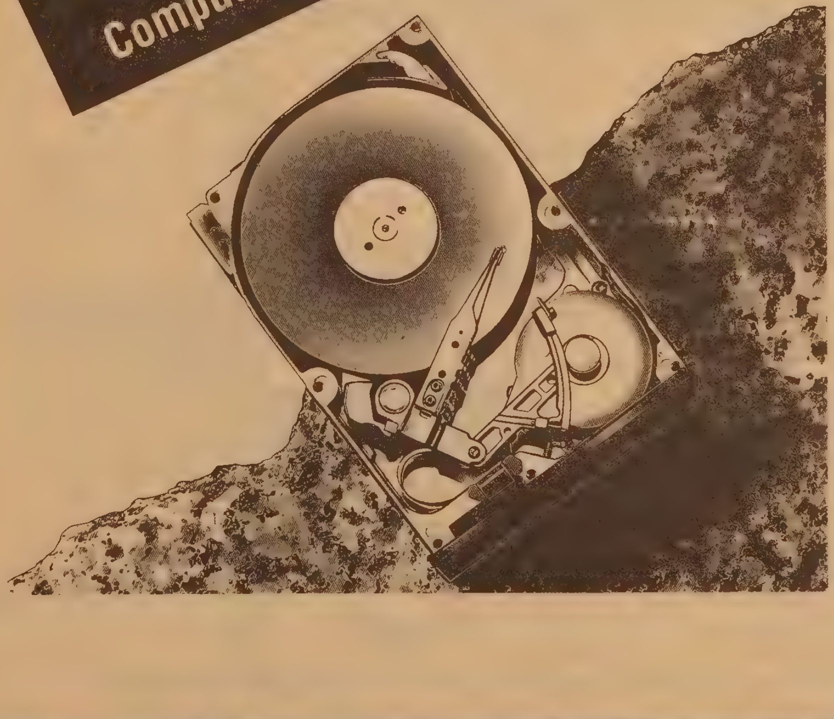

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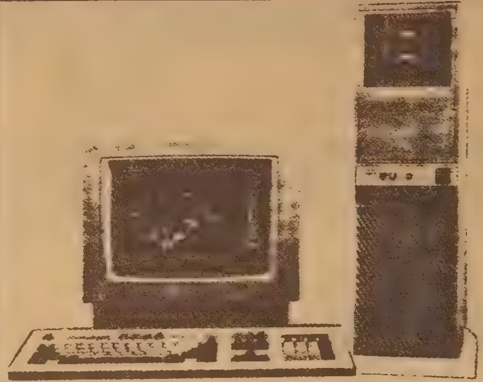

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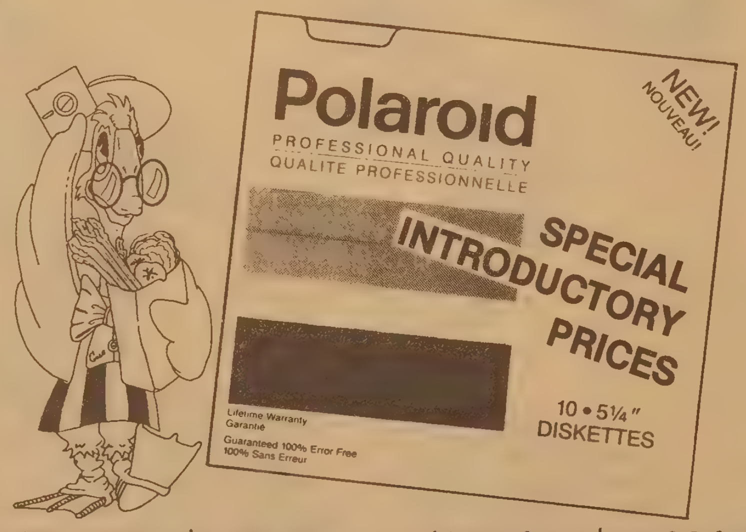

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How often do you raise investment funds?

Typically we raise one every four or five years.

How should someone approach your firm for venture capital?

The best thing to do is give us a call and tell us what it is, the broad parameters.

Roger Barry, General Partner
Crosspoint Venture Partners
1951 Landings Dr.
Mountain View, CA 94043
(415)964-3545

What sorts of ventures does your company specialize in?

Seed start-up, West Coast location, it can be any industry. You focus because of the geographical location, so you do the things that you see. If you're in the valley here, you get to see a lot of things that are oriented toward semiconductors or memories. We have an office in southern California, and there we see a lot of medical instruments and device companies.

Yet we've done some retail. We did a thing called Office Club, which is a Price Club with office supplies. We do distribution businesses.

What distinguishes your company from other venture capital firms?

Specializing in the early stage exclusively. We only do investments that are in the seed stage where we're the first investors in. We're exclusive yet we're a very large firm. We have $125 million under investment. We're the largest seed-only firm in the US.

What do you look for in a company when you consider investing in it?

Obviously an opportunity for the company to become large enough to be a publicly traded company. A very fast growing market, the type of management that's entrepreneurial, that understands what it takes to build the business. [A situation] where we can put as much of the risk as possible up front.

How often do you raise investment funds?

It works out to every four years, five years. We've been a fund since 1982. Crosspoint has been around maybe 20 years before that, doing what we do today, but without a pool of funds.

How should someone approach your firm for venture capital?

Call us, talk to one of us on the telephone about what their company is, then send us something in writing. They should have at least taken the time to put down in a couple of pages what it is they expect to do.

Gregg Mueller, General Partner
Mayfield Fund
2200 Sand Hill Road
Menlo Park, CA 94025
(415)854-5560

What sorts of ventures does your company specialize in?

We specialize in early stage high-technology venture investment. Primarily in the western United States. Companies currently in the public eye include MIPS Computer Systems, Silicon Graphics, and going back earlier, LSI Logic, Cypress Semiconductor.

What distinguishes your company from other venture capital firms?

We've been in business since 1969 and we've continually focused on the earliest stage high-technology ventures. We've had a lot of experience putting those kinds of projects together. Especially as it has to do with management development within those companies. Which is always an issue because at the seed stage you don't have a complete team.

What do you look for in a company when you consider investing in it?

You'd like to have all the good things, which include a huge market, a proprietary technology, a complete management team, a known distribution channel. Unfortunately that doesn't seem to be the case, so in lieu of having all of those things, the things that pop out at us are the leading technical people in a field, or the leading technical guru in a field, an exploding market opportunity, or an experienced entrepreneur or manager who has built a business. Any one of those things will peak our interest.

How often do you raise investment funds?

We've tended to raise new partnerships every four years or so. Each fund is invested in anywhere from 20 to 40 companies.

How should someone approach your firm for venture capital?

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• Samsung Multisync	.425
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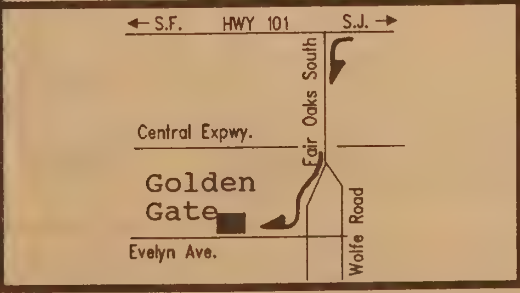

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- Comprehensive Installation Manual

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Brentwood Associates
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Los Angeles, CA 90049
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What sorts of ventures does your company specialize in?

We have two areas of interest; one is leveraged buyouts and the other is the broad field of venture capital. In that area, our investment focus is almost solely on high technology. Within high technology we're shifting our emphasis from primarily computers, electronics, semiconductors, telecommunications over to medical technologies.

Why is that?

I think we feel that area is somewhat less competitive. We also feel we have some very special expertise in that area. Three of our general partners have been very active investors in the medical area. One in particular, David Chonette, was a general manager of American Hospitals Supply, and had an extraordinary record of running medical device companies. He ran several divisions and during the course of his career there built the American Edwards division from under $10 million in revenue to over $200 million in revenue. He's very, very well versed in all the medical technologies and in their markets.

What distinguishes your company from other venture capital firms?

We do have a very active investment activity in both leveraged buyouts and technology venture capital. And the firm organizationally is divided along those lines with some partners focused almost solely on leveraged buyouts and some partners focused almost solely on venture capital, although we come together at decision time to help each other out on the decision-making process.

I think we cover the industries very well from an expertise standpoint and a geographical standpoint. Our main headquarters are in west Los Angeles, and we have an office in Orange County, and we have an office in Menlo Park. That allows us to cover the Silicon Valley very well as well as the Los Angeles basin, plus the medical corridor from San Diego to Orange County.

Beyond that, I would say that we are the largest and oldest and best known firm in southern California. While southern California has become increasingly competitive with new firms moving in here over the last five years, we still feel it's less competitive than an area like Silicon Valley.

What do you look for in a company when you consider investing in it?

Our criteria are the same as everyone else's. We're looking for a very strong management team. Particularly a strong CEO who's very knowledgeable about the business he's about to run. We're looking for a proprietary product that seems to be demonstrably superior to its competition. And a market that is sizeable enough or growing rapidly enough to build a large business. And by and large we're talking at least $50 million, and preferably over $100 million.

Are you first, second, or third round investors?

All of the above. Depending on the deal, if it has all the right ingredients, we'll do even a seed fund investment. That's a little bit harder for us to do, but we have done them and we will do them. We've been very active in doing start-ups over the years. And we have also participated even at the mezzanine level months before a company goes public.

How often do you raise investment funds?

The norm in the industry seems to have become to raise funds every three years or so. That's about how long it takes to get a fund fully invested. We haven't raised capital for five years because our last fund was so big. Brentwood Four was a $161 million fund. It was substantially oversubscribed. We didn't intend to raise that much money, and we were concerned about putting that much money to work. So instead of taking it down over the normal three-year period, we decided to take it down over five installments and invest it more slowly. This year we closed a leveraged buyout fund. We did that roughly five years after the closing of Brentwood Four.

How should someone approach your firm for venture capital?

They should make a submission of an offering memorandum or a business plan to any one of the general partners or any one of the associates within Brentwood. ■

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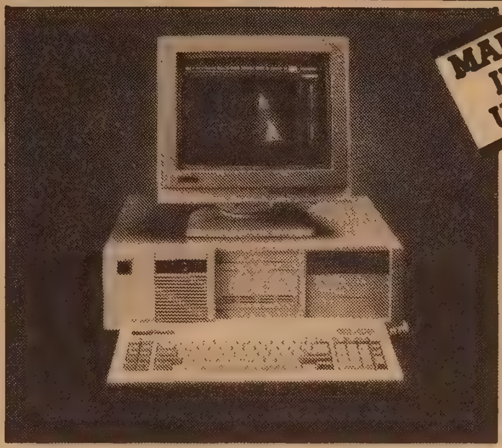

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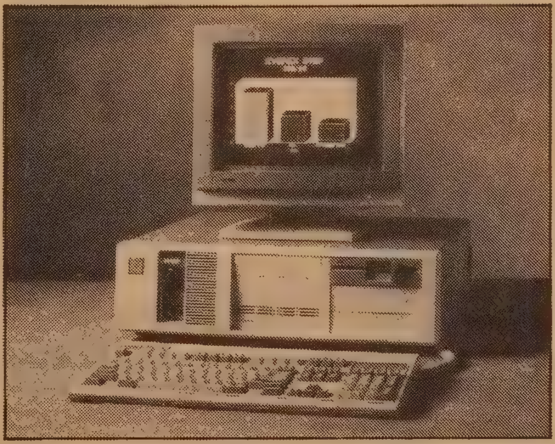

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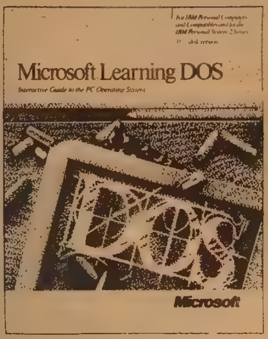
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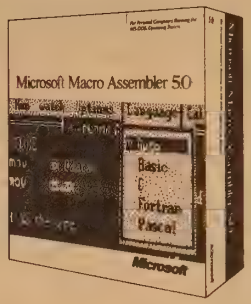
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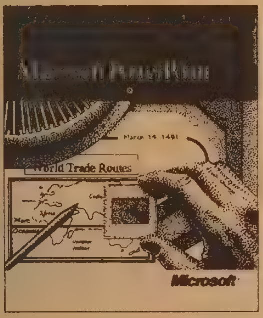
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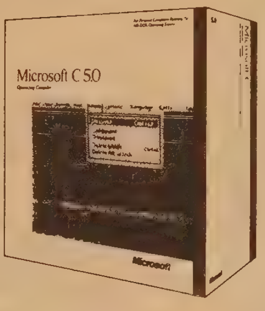
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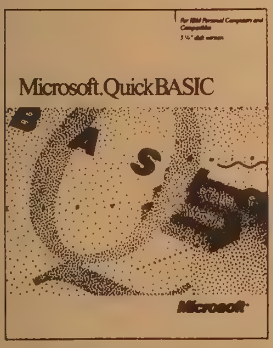
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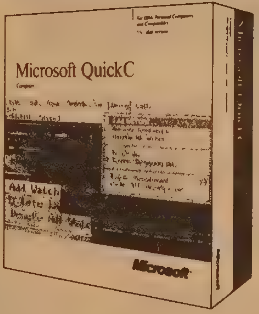
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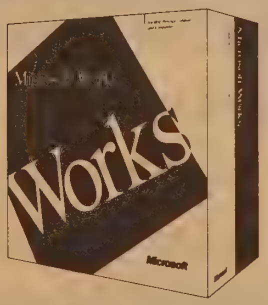
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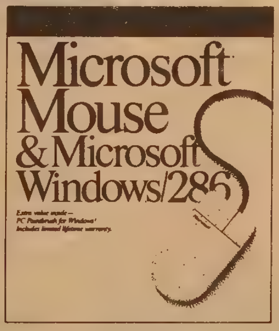
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Regis McKenna On The Post-IBM World

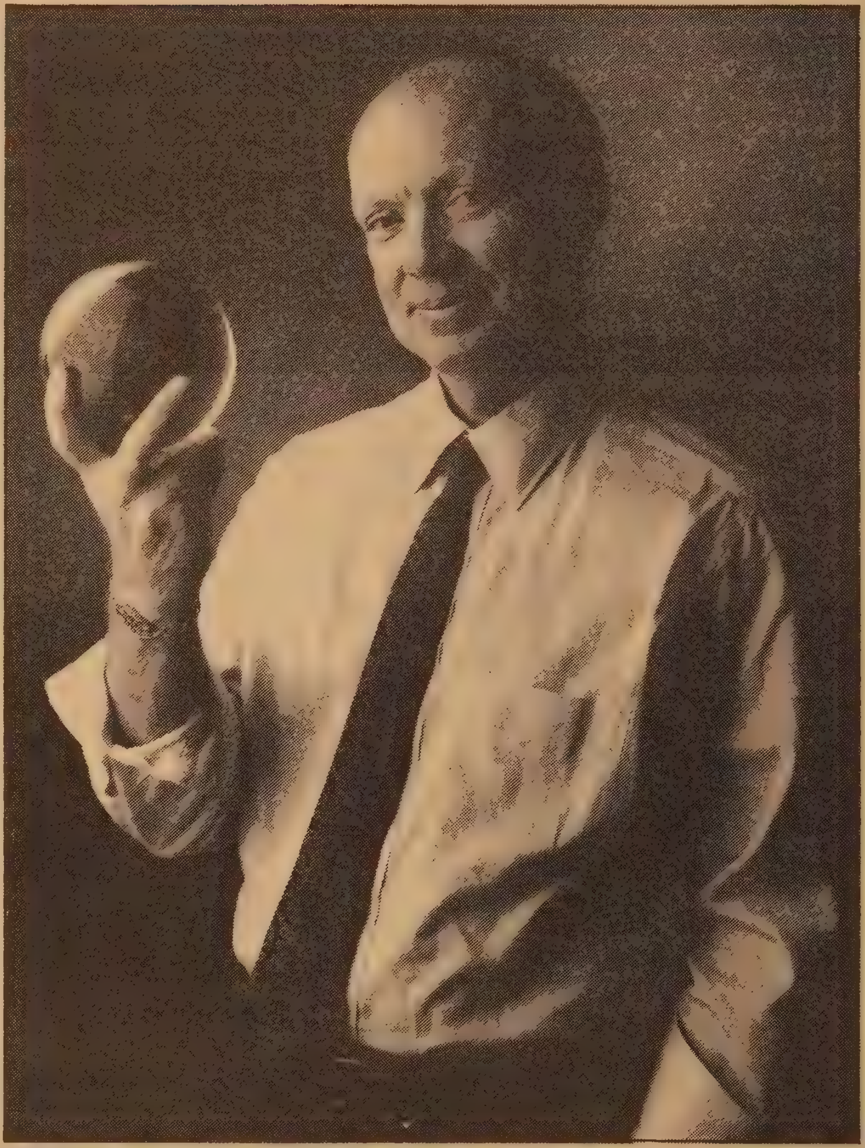
Changes, Opportunities, And Abundance Through Diversity

By Mary Eisenhart

When Regis McKenna talks, high tech listens. The chairman of the marketing consulting firm Regis McKenna, Inc. and a general partner of VC leaders Kleiner, Perkins, Caufield & Byers, he has been instrumental in the start-ups of some of high tech's most spectacularly successful companies. His unique perspective offers unusual behind-the-scenes insight into the forces shaping the industry—and what's ahead.

His latest book, *Who's Afraid Of Big Blue?* (Addison-Wesley, 1989, ISBN 0-201-15574-5) discusses the rise of IBM as a monolithic vendor, its success based on a all-encompassing strategy of proprietary solutions, and a campaign to be all things to its customers. It continues by analyzing the ways in which IBM became a victim of changing times and increasing diversity, its formerly-unchallenged supremacy eroded on all fronts by specialized start-ups from Cray, Tandem, and Amdahl to Compaq, Sun, and Apple. Looking into the future, McKenna examines the implications of an industry that's growing explosively at the same time it fragments into a seemingly-infinite number of niche markets, and looks at the new strategies required for success in such markets.

In a recent interview at his company's Palo Alto headquarters, McKenna elaborated on some of the topics in his book—the rise of diversity coupled with productivity increases, the fragmentation caused by the explosive growth of specialized markets, and the type of creative networking and innovative solutions required to keep all this from disintegrating into chaos.



> "Edison didn't go out and ask the world what he should invent. Bob Noyce didn't ask people if they needed an integrated circuit; he created the integrated circuit, and the integrated circuit then went out and found markets."

One of the central themes that runs through "Who's Afraid Of Big Blue?" is the dichotomy between a sales-driven company and a market-driven company, with IBM being firmly entrenched in the sales-driven camp. Could you explain that a little?

Well, this term market-driven is being used a great deal, and I'm not sure people really understand what it means. Somehow or other it connotes this idea of being closer to your customer, and therefore the customer's will and options and choices and decision-making influence what you make.

In technology businesses things work a little differently. Edison didn't go out and ask the world what he should invent. Bob Noyce didn't ask people if they needed an integrated circuit, he created the integrated circuit, and the integrated circuit then went out and found markets.

So in the technology business being market-driven has kind of a unique connotation. In the technology business, the technology moves almost in a life of its own—new things are discovered, science con-

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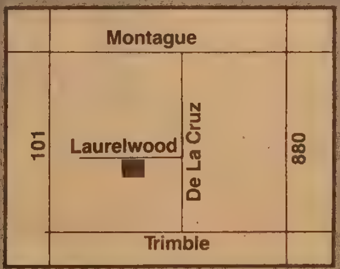

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tinually bubbles up into technology and creates new tools. It is when those tools touch the marketplace that they are accepted, rejected, or modified. So that an Apple computer, a Macintosh, comes out, and people start using it and they say, "We would like more memory. We would like a different kind of keyboard. We would like the back to come off so we can make more options. We'd like slots in it." It is in that adapting to the marketplace that you become market-driven.

So "market-driven" in a technology business means adaptability. And the faster you adapt—to your customers, to your markets—the more market-driven you become. When I use this in the context of the book—IBM started as the standard in mainframes. They created the standard, they created the products themselves. In a sense they were the people that told you what the solution to your problem was—even this idea that IBM people always understood your industry as well or better than the people they sold to. So they could go into the automobile company or the factory or whatever, and say, "This is what you need—our equipment. This is the kind of system you're going to use—it's our equipment. This is the kind of standard you use—it's our standard."

Well, as the technology grew, particularly from the bottom up, with the microprocessor and other types of adaptable, programmable-type devices, and through the use of largely programmable-type technology, companies could go in to users and say "Maybe I could fit what I have to suit your need." And people would say, "Well, we're a Blue shop. We're an IBM shop." And they would say, "Yeah, but we've got this very high speed..." and the guy would say, "Yeah, but we've got an IBM shop. What we need is to maybe put some pathway or gateway to IBM, even if I can use your product." So the company would say, "Sure, we'll do that."

So they were much more flexible and willing to adapt what they had to the customer's environment because they had to, and as a result it taught them to be more market-oriented. In other words, if Apple wanted to get into corporate America—remember, a few years ago the issue was "Can you put a DOS card in?" Apple said "Sure." Well, at one point they said no...

Steve Jobs said "It's against the religion..."

But then that changed, and when there was the ability to put a DOS card in, they started entering corporate America. Not that anybody *uses* that DOS card, or that a lot of people use it, it's that the customer wanted the option and the flexibility and the security.

But if you would ask IBM if they'd put a VMS [DEC's proprietary operating system] card to make it DEC-compatible into one of their computers, they would refuse to do that.

They're kicking and screaming about UNIX to this day...

That's right.

So what happened is that IBM developed this whole mentality. It's not just some conscious decision on their part, it's part of the whole way in which the corporation evolved through its leadership in mainframes—to think of kind of a monolithic approach to the marketplace in which we are the standard, we set the standard, customers listen to us.

And as a result the smaller guys trying to get in and grow the market had to become more flexible—in a sense, more market-driven.

Was part of IBM's success with this approach due to the fact that a lot of the markets it did business with were essentially monolithic themselves?

I think the market was monolithic, the products were monolithic, the applications were monolithic. You think about how the industry has changed in the last 20 years—at one point, when you said "the computer industry," you meant mainframes, because when you looked at a pie chart, 90% of that pie chart was mainframes. And most of that mainframe market was IBM, and maybe a handful of other companies. Today, if you looked at that same pie chart from a

"When there was the ability to put a DOS card in the Macintosh, Apple started entering corporate America. Not that anybody USES that DOS card, it's that the customer wanted the option and the flexibility and the security."

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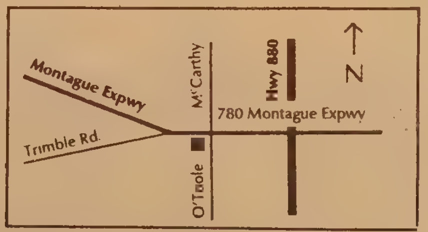

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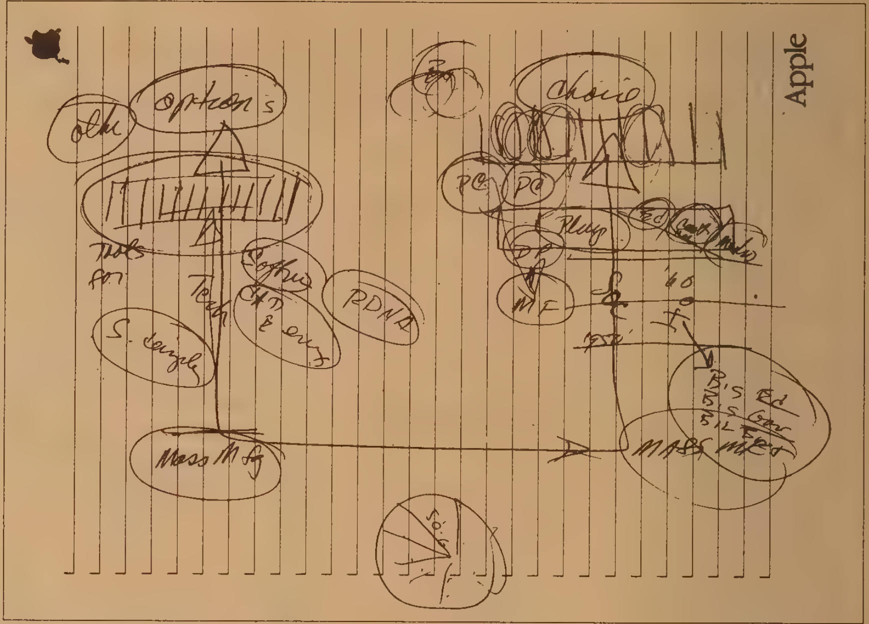

McKenna's version of the transition from abundance through uniformity in the Industrial Revolution to abundance through diversity and the plethora of options that await us in the future.

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product standpoint, it's mainframes, and all kinds of mainframes. A Cray is a mainframe.

So you've got supercomputers, you've got mainframe computers, you've got minisupercomputers, you've got superminicomputers, you've got workstations, you've got laptops, you've got PCs—there's all these fragmented *types* of computers now.

Then you look at the marketplace, and the marketplace is no longer just the Fortune 500. My firm bought over $200,000 worth of computers last year. That's a lot of money expended for computers. And so firms that are relatively small are investing large amounts of money—we have a mainframe, we have a minicomputer, we have an HP 3000, and we have Macs. We have all kinds of computers, as a small firm.

So you start looking at markets—there's the government marketplace, there's the small business marketplace, there's the medical marketplace, there's the legal marketplace—because the software, the over 25,000 applications that you can buy out there today, can adapt the product to a variety of markets. And then a VAR system grows up to say, "I'm going to take that *just* into the medical market." or "I'm going to take that *just* into the legal market."

So now whole infrastructures of fractionalizing the marketplace are growing up. And they become experts in cutting the market up, and the flexibility of the platforms of the technology allows that to happen. IBM doesn't have control of that anymore; it's beyond them.

Did it ever?

Well, it did in the mainframe days because the marketplace was monolithic; the product, the technology, was monolithic.

But an Intel or a Motorola that sells a processor, they don't want to just sell to IBM, they want to sell to as many manufacturers of computers as possible. So you've got all these semiconductor people selling processors and RISC chips and everything else that are going to try to create more of a market for their chips, which is creating more computer-like vendors, and with more computer-like vendors, you start looking at the ability to create software. That whole new aura of technology, that whole new aura of infrastructure, is creating more fractional marketplaces to go after.

And if you're a big company with a monolithic approach, you can't go after all these little segments. It becomes too difficult. You can go after a piece of it, but you don't get all of it anymore.

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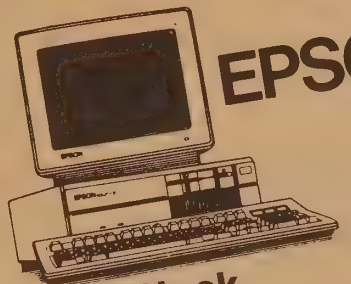

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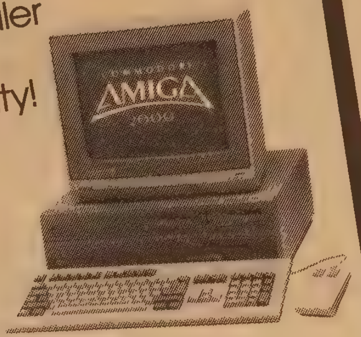

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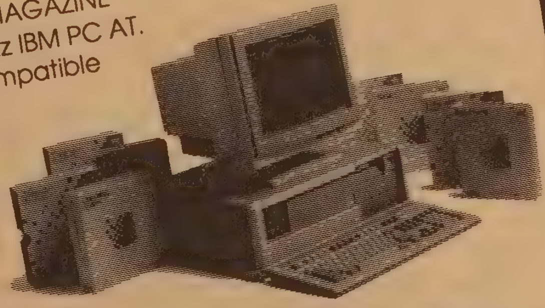

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See, IBM could've gone into a Fortune 500 company or Fortune 1000 company and said, "We're going to help you get set up—we're going to provide you with the software, we're going to provide you with the hardware, and we're going to do the systems analysis as well." But today the systems analysis business is broken up—Arthur Andersen and Peat Marwick and other people are doing huge amounts of systems integration work. The software you can buy from a variety of sources, the hardware you can buy from a variety of sources, and the more standards are out there, the more potential there is to do multivendor environments.

So in a sense it's not IBM's fault. They've lost control of the marketplace, but the marketplace has been responsible for them losing control of it. The technology has created this more than IBM has.

"In a sense, the movement from mainframe to PC was very consistent with the evolution of our society."

You make the point that technology creates new markets instead of being essentially a commodity that existing markets pick up.

Yes. For example, prior to 1976, there was no personal computer market. No one had even thought that there would even be such a thing, until the 8-bit processor became truly a product, along with programmable memories and small disk drives. All that technology came together, and if it weren't there we would not have had the burgeoning marketplace.

I went back and looked at the prognostications of the research companies in 1978 for the personal computer industry in 1985. The most optimistic forecast was that it would be a $2 billion industry. It was more than $25 billion.

If you go back and talk to people like Bob Noyce in the early days of the semiconductor and the microprocessor, they saw it as helping this little application or this little application. The microprocessor was supposed to sell—when Intel first did it, they said, "Well, it'll help us sell memory." But in fact they've built a $2 billion company out of just microprocessors, and they got out of the memory business. It does sell a lot of memory, but not for them.

So the technology creates both the opportunity and the changing environment. It creates these markets—I suspect we'll see new markets arise. The market's not just sitting there waiting to be discovered, it's created by the influence of the technology itself.

"The technology creates both the opportunity and the changing environment. The market's not just sitting there waiting to be discovered, it's created by the influence of the technology itself."

The Macintosh is an example—it brought all kinds of people into computing who would never have gone near the stuff before, myself included...

Yes. And me. I used 'em, but not every day. Since the advent of the Mac, I use a computer every day, but certainly before that I used it maybe once a week.

And it seems like in the course of doing that, it loosened up the way people thought of computers. I don't think that the personal computer revolution has quite accomplished what a lot of the Homebrew Computer club guys wanted to do in terms of a sort of power-to-the-people grassroots movement, because the monoliths are gobbling up the personal computers faster than the guys in the garage are cranking them out...

Yeah, but it is doing some of that. It is changing the world in a very fundamental way. Even though the corporations have the purchasing power, even within the corporation itself it puts more power into the hands of the individuals. Think about how that control used to be from above, and now, at least, many people keep their own information on it. I've watched people go out the door carrying them here, bringing them in the next day, doing their own thing, developing their own graphics.

So it's putting a lot more knowledge and power within the hands of the individual, making them smarter, more efficient, feeling more accomplished. It's not the '60s revolution, but the '60s revolution did certainly create a whole new world in the sense of computing.

It did something else, and that is that it began the de-massification of technology and the applications of computers. You could say Apple's selling a lot, Sun's selling a lot, all these companies, but in a sense there is no mass market in computers anymore. As I mentioned before, you take a piece of software and take it into a particular service application, along with a service network to provide that and integrate it, and you now have, no longer a mass market, but a whole raft of niche markets.

We interviewed Larry Ellison of Oracle recently, and he says the personal computer isn't personal anymore—the whole idea with the personal computer is that you have YOUR information and you choose YOUR software and all that, and that's not the way the work environment is going. Everybody's got to be on the net. You want to be on our net, you need an Ethernet card. We're using the Oracle database, you've got to use Oracle. So it seems like in some ways the microcomputer environment is just turning into the mainframe environment writ small.

No, I don't think that's what's happening. Can I use your paper a second? [Takes tablet and starts drawing diagram] I don't think that's what's happening. I mean, they are certainly getting more and more powerful, but let me show you a paradigm that was the book I *really* wanted to write.

This [one side of the diagram] is the evolution of technology and this [the other side] is the evolution of society. We go back to the Industrial Revolution, when mass manufacturing created mass markets. If I could only make a blue widget, I had to get everybody to like blue widgets.

But it did more than that. If you go back and look at the influence of technology, mass manufacturing, on our society, we began modeling everything after mass manufacturing. Education—everybody went to the same school. Even uniforms—we dressed alike, everybody was taught the same things, we rehearsed things—everything became standardized, and so big education became part of the culture. Government, machine politics—government became organized and became like a business.

And of course all business, not just the manufacturing end of it, restructured—Sloan at General Motors has been the model of creating the boxes, neat, little, organized, hermetically sealed, so it's not a process anymore, it's pass-off. Islands. It was organized around the idea of everybody doing their job, and it didn't have to relate to the other person. It did ultimately at the end, but it was a discrete function that each person performed.

"An engineer can now design his chip, because he can buy a relatively low-cost workstation with the software to do it. He couldn't do that ten years ago. The tools weren't there. And what they're doing with these tools is creating more and more products to serve more and more needs."

So big education, big business, and big government were institutions that were established based on the way that our society evolved through this whole manufacturing process. In 1908 there was a play on Broadway called *The Melting Pot*, the idea that we will all come to America and become one monolithic society. All speaking the same language. All after the same pot of gold. All living in nice suburban homes. And so our mental concepts moved from having everything customized, where we built our own homes, we built our own furniture, into a mass mentality.

The 1950s were the prerequisite to change. In the 1950s, there were books—*The Man In The Gray Flannel Suit, The Organization Man, The Lonely Crowd*, all of Vance Packard's books about the hidden persuaders. And all of those books essentially pitted an individual against these institutions. It was always a battle between the big institution and the

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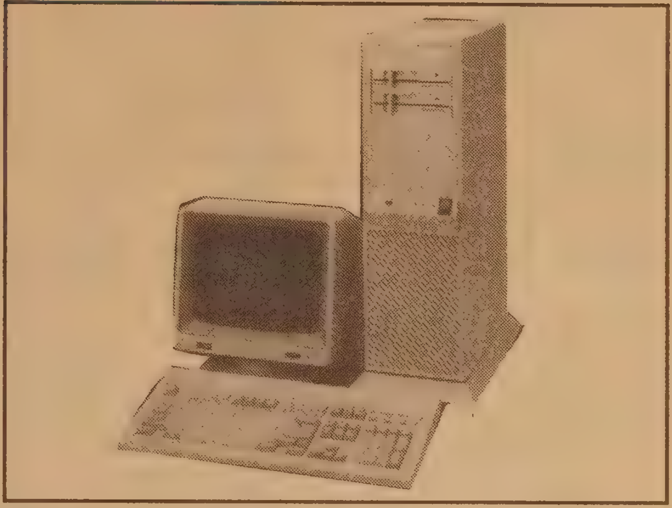

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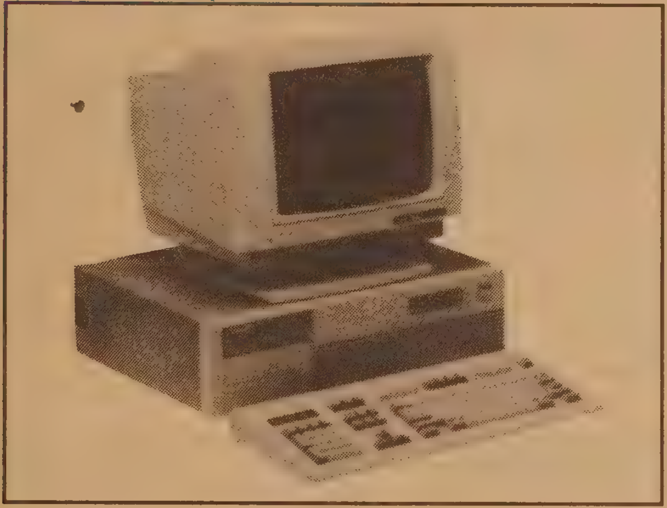

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problems the institution created and the individual's role.

The '60s essentially built on the internal workings of the '50s, and we saw the whole beginning of the rights movement. Out of civil rights came all of the protest movements, and they were all started by individuals. Not societies, not large groups, but small, usually one person, or a small group of people. Vietnam, Watergate, environmentalism, consumerism, all of these were small groups of people protesting this large influence of organizations on our environment, on our society, on our organizations. And so the '60s began to break up, just as the mainframe was here moving toward distributed processing, and eventually to the PC.

So we have ended up out of this with developing platforms for diversity. The platforms that have evolved through this period are largely three—education, the courts or the Constitution, and the media. Education, because our educational system from the '50s and '60s expanded rapidly to more and more people—the more educated you are, the more you feel that you can take on more issues, you feel more self-confident, you're more knowledgeable, so knowledge became the prime factor as it grew. You had to have a knowledgeable base out there in order to create individuality and diversity—and to buy computers. That began in the '50s after the war with the GI Bill—we sent huge numbers of people back to school and created that whole education rise.

The court system, which is based upon the whole rights movement—everything is rights, black rights, gay rights, animal rights, elderly people's rights. Rights is "I have my individuality as a citizen to participate in society to its full extent."

And the media. The media have essentially promulgated this, because a particular rights movement in one area of the country can usually see the media, and communicate in effect with a rights movement area on the other side of the country—when the Solidarity movement in Poland went on strike, so did the shipworkers in Chicago. They refused to load Eastern European ships. The media created that, allowed groups to essentially observe and see like movements and create a sense of identity.

But what this has created is a society that is almost infinitely fragmented. Each individual power group—I call them micro-majorities. The tobacco companies, the Moral Majority was a minority; Reagan was elected on 27% of the vote. Even the people who can get into power can do it with a small number of committed people.

But even more so—you look at Procter and Gamble and Sears and others, the problem they've gone through in the past ten years is that there are no more mass markets for anything. There's only individual niche markets. And so these mass producers have found they have to change.

But of course what happened was that the PC came along and helped create this individualized movement. It was part of it, it grew out of it. In a sense, the movement from mainframe to PC was very consistent with the evolution of our society.

Let's look at the technology side. Mass manufacturing went a long way—it went up through the '50s and into the '60s, but pretty much from the '60s onward, we started creating tools for diversity: software, computer-aided design and engineering, computer-aided everything. Recombinant DNA, silicon compilers—all of these are tools that allow you to create a solution for a very narrow segment of industry or society, that wasn't economically possible to do before.

So a chip designer can sit at Apple and design a chip using a Sun workstation—well, maybe not a Sun workstation (laughs), but somebody's workstation. The point is that an engineer who is a systems guy can now design his chip, because he can buy a relatively low-cost workstation with the software to do it. He couldn't do that ten years ago. The tools were not there. And what they're doing with these tools is creating more and more products to serve more and more needs.

The diversity of products—the fastest-growing category of products in almost all segments of our market today is owned by "other." Our supermarkets—we've gone in the last decade from 10,000 items on the shelf to 20,000 items on the shelf. The major market share ownership of personal computers is not IBM or Apple or Compaq—it's "other." Over 50% of the marketplace is owned by it, because the tools are there to get quickly into the business. So Zenith can jump into the business, provide a particular solution for government, and build a billion-dollar business almost overnight.

This happened in all areas. The largest market share of cookies is owned by "other." The largest share of film processing in this country is owned by "other." The largest share of bottled water is owned by "other." The largest share of jeans is owned by "other." The largest share of CMOS gate arrays is owned by "other." So as you look, "other" is a large category.

What's happened is that industry, through technology, is creating options. Lots of 'em. Society is teaching us that we have choice. What has

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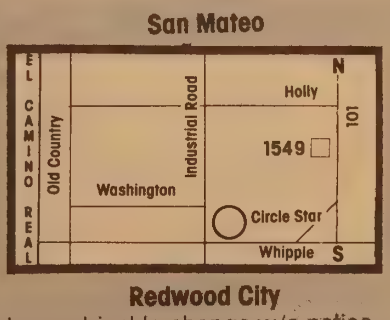

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> **"Networking is a social concept, a way of dealing with a fragmented society. It's not just a moving back to mainframes, it's a whole new way of cooperation that we *must* do, or, I'll tell you, we can't survive."**

happened isn't that we're moving toward the mainframe; the problem is, with all of this, how do you ever show any coherency?

Well, in society, you begin networking, right? The people who want environmental movements have found out that if they really want to get the environmental movements, they have to start working with people in certain industries. The semiconductor people, when they spun off and said "we want to fight Japan," they originally said, "we don't want to have anything to do with the automobile industry, don't want anything to do with the textile industry"—what they found out was we're all in this together. Even the guys in the semiconductor industry found that they have to cooperate.

And so networking is a social concept, a way of dealing with a fragmented society. It's not just a moving back to mainframes, it's a whole new way of cooperation that we *must* do, or, I'll tell you, we can't survive. 'Cause you cannot have all of these fragmented groups continually exerting their own autonomy in a democratic society. You get nothing solved.

One of the things I really liked in the book was Scott McNealy's story about how they bring the client's engineers in and have them talk to the Sun engineers about what they want, and there are no marketroids in this loop at all—or that's just how they do marketing, without flim-flam and bullying.

Sure. Think about this. Think about the shorter and shorter product life cycles. How do you solve the problem of shorter product life cycles? Can you go the old route, the old mainframe model, the mass manufacturing model?

Well, here's the way it would work in the past. How do we design a product? Well, first of all we have to have a meeting with our design people. They come up with a design, the marketing people are then called in and told, "Here's what we think we can build." They then say, "Gee, we'll go out and talk to a few customers, do some market research." So they go out and do the market research.

They come back in. They then meet with engineering and they fight for six months. You finally come up with some tentative specs, and maybe you go out again, and maybe you just start doing it.

Finally it's coming along, and it's late, and it's late because the guys keep coming in and arguing every time they meet to change it, because the world is changing. And then when they get it done they've got to go out and educate their salesmen, to say "Here's what you've got to tell the customer." Then you've got to educate the customers. I mean, this took *years.*

Well, the technology here, these design tools, are creating faster and faster cycles. How do we compress this all, without networking? Without integrating the customer in some way back into the design process?

If I put a laptop computer in the hands of a salesman, and the salesman is able to go in before a customer and sit down, and not just take an order, but now start showing him systems and databases and start giving him information that I have acquired across the world—if I am able to communicate back to my plant through modems.... The guy says, "Look, I've got this kind of a problem," and the salesman can go into the database and help him—he's no longer a salesman, he's now helping integrate the customer back into the process of the design. He's integrating him back into the need to have this relationship, and the only way it's going to be able to do that is through technology. We're not going to be able to hire enough people who are smart enough to span that whole spectrum.

So this isn't going back to mainframe. That's the wrong way to think of it. This is going forward to create a more cooperative involvement in which the consumer and the manufacturer are getting closer together through the uses of technology. It's the only way we're going to solve this fragmentation problem, which the technology's creating. But the technology can also create the solution to that. ■

Next month: Implementing creative forms of cooperation, including the NeXT-Businessland agreement and other strategic alliances; survival tips for a changing world.

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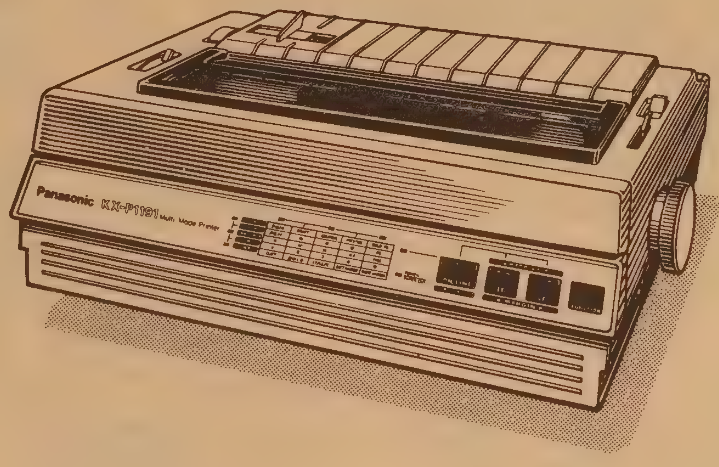

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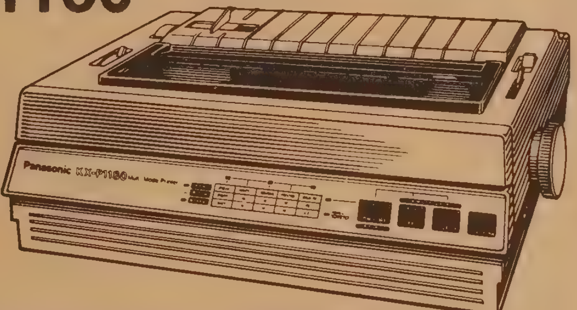

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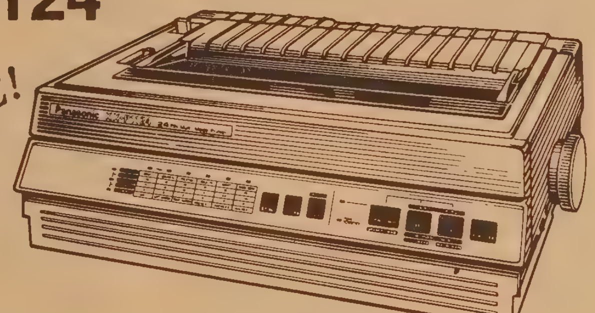

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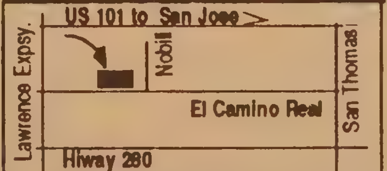

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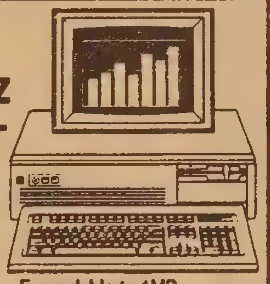

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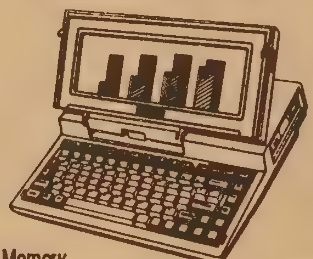

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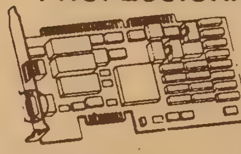

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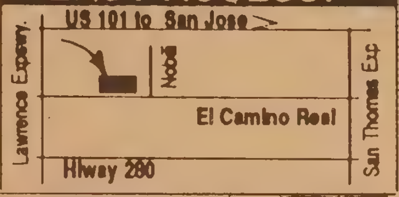

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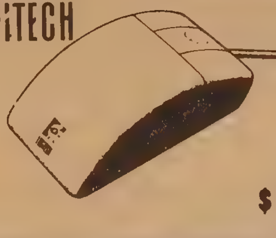

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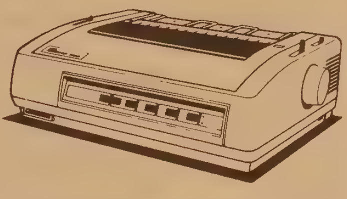

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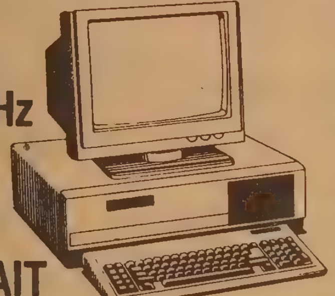
286
12MHz



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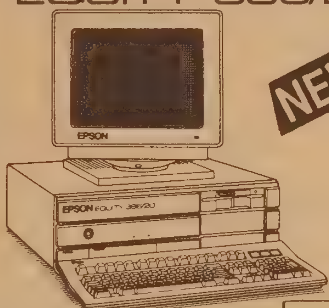

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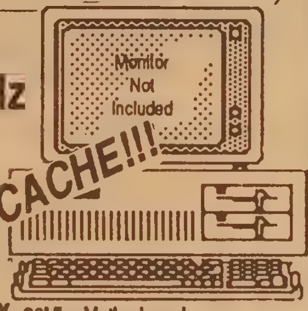

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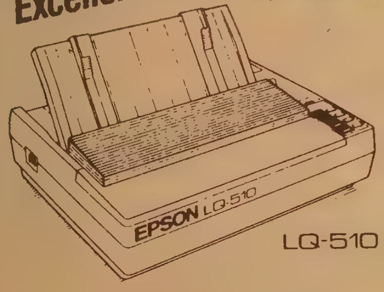

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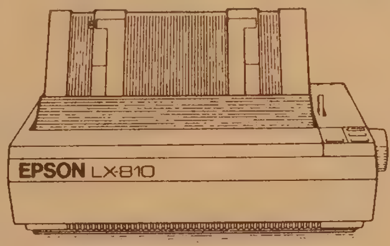

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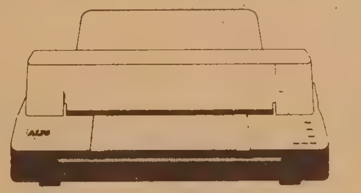

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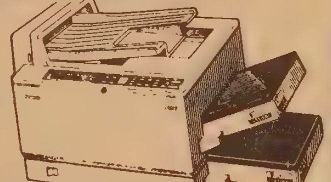

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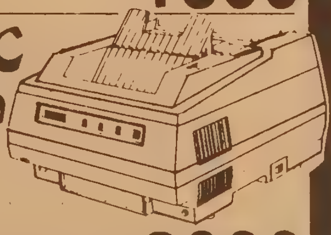

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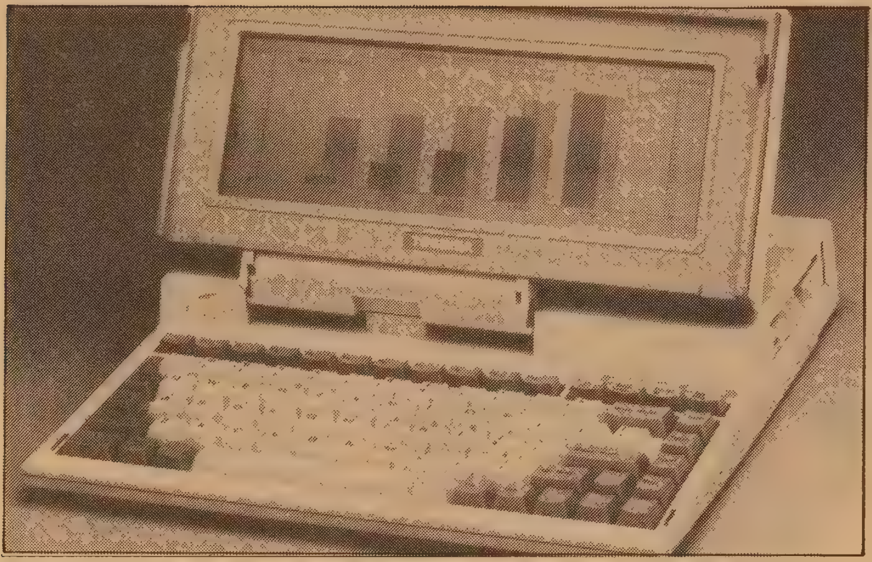
Toshiba's T1000 Revisited

Back To Basics With An Old Favorite

By Ed Kahn



With so many high-powered laptops coming on the market these days, we often lose sight of the original idea behind lightweight laptops. Beginning with the Radio Shack Model 100, computer users were able to take along a lightweight, bare-bones computer and transfer data back to a desktop machine. As powerful computers became smaller and smaller, manufacturers began to promote their portables as alternatives to desktop units.

After recently lugging an 18-pound powerhouse around the country, I recalled a good deal more clearly that my starting point had been to find a computer that I could conveniently take along as a satellite to my desktop monster.

Although I must say that my favorite all-time computer is still my old NEC 8201—the equivalent of the Model 100—I eventually gave it up because of its small display and less-than-100% compatibility with MS-DOS word processors. It seemed a lot easier to lug around a portable with a full screen display and the ability to run the same applications I was accustomed to running on my primary machine. Then, too, most of my portable work consisted of moving the machine in and out of my car.

But navigating through crowded airports gave me a whole new perspective. I was suddenly longing for the good old days of a four-pound portable, but spoiled by the full screen and other advantages of the newer machines.

In any case, my thoughts went back to Toshiba's workhorse portable that in many ways has taken the place of the old Model 100 and its cousins. As I took a closer look at the T1000, I was impressed by its light weight, ease of operation, and excellence of design.

The T1000: Still A Winner

This portable is unpretentious. It is designed to be used either as a standalone computer or in conjunction with a desktop. If it functions as your only computer it will do an admirable job. Although it is not to be compared to more powerful expensive units, it is so well designed that you will feel like you are using a much more elaborate computer.

The basic T1000, available at discount for about $750, comes with a single 3 1/2" disk drive. It is powered either by its internal battery or the included power supply that also recharges the battery.

But the design of the computer puts it in a class by itself. It weighs 6.4 pounds and has an LCD display without backlighting or anything fancy, but when you turn on the unit you will discover that it has both a built-in ROM chip containing all of the DOS files and a small non-volatile memory area that stores all of your startup files even when the unit is turned off. So time and date are retained, and you are ready to begin work at the familiar C> when you turn the unit on.

The 512 K of RAM that comes with the machine is adequate for many applications. Even though there is only one disk drive, it can serve as either the A or B drive. The result is that it is easy to copy individual files from one floppy to another. For all practical purposes, this little computer gives you much of the same flexibility you would have with a computer that has two drives. But there is more.

Toshiba has a whole list of user-installable options. The most important is a 768 K memory expansion card ($399). This additional memory is extremely flexible. Although there are a number of ways to use it, including assigning a portion as Lotus-Intel-Microsoft Expanded memory (LIM-EMS), the most powerful configuration for me was to assign 128 K to bring up the basic RAM to 640 K and then assign the remaining 640 K as a non-volatile hard RAM disk. This means that you have the equivalent of a 640 K hard disk. This RAM disk functions like a hard disk, but its memory will be lost if the computer is left unattended for more than a couple of months or you allow the rechargeable battery to run completely down.

> **After recently lugging an 18-pound powerhouse around the country, I recalled a good deal more clearly that my starting point had been to find a computer I could conveniently take along as a satellite to my desktop monster.**

I used the RAM disk to install a full *WordStar,* including spelling checker and thesaurus, so when I power up I have a computer that is ready to go to work writing. All I need is a floppy disk to hold data files. Even this information can be accommodated on the RAM disk as long as I don't intend to write a novel. Certainly it is adequate for whatever I might get done in a normal writing session. Back at my desktop system, I can move the files I have created off of the Toshiba T1000.

There are a number of possibilities for moving the data. Toshiba has a 360

Continued on page 150

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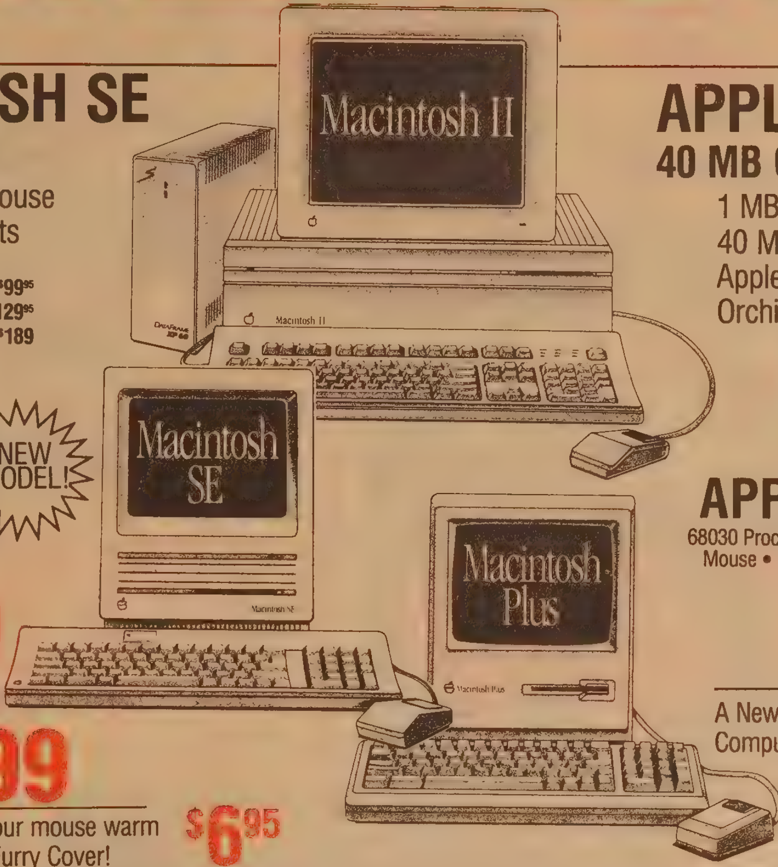

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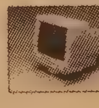

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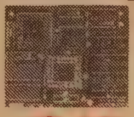

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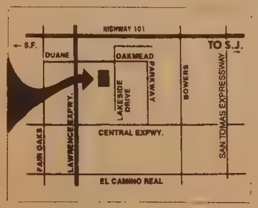

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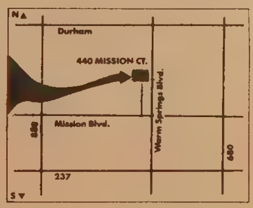

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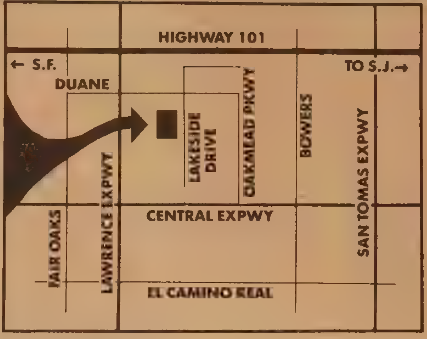
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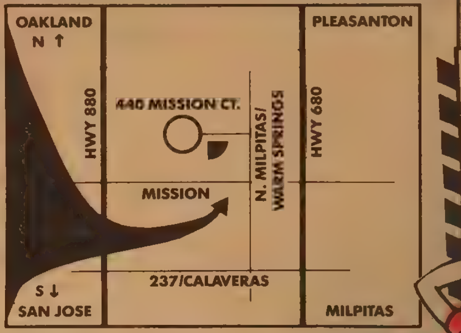
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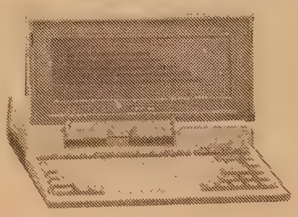
T-1000 LAPTOP COMPUTER



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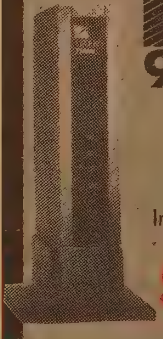

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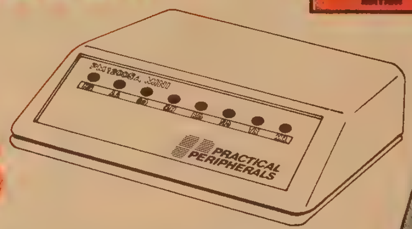
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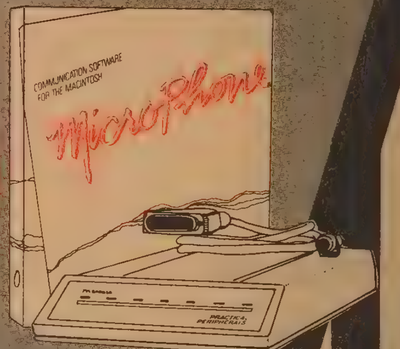
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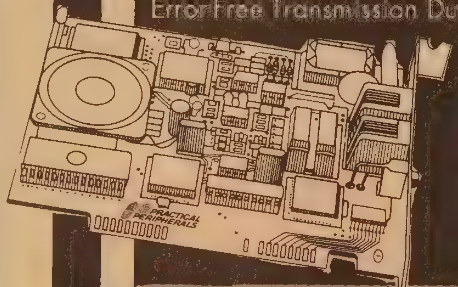
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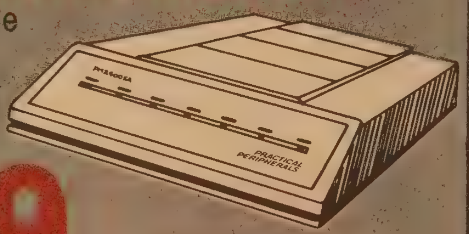
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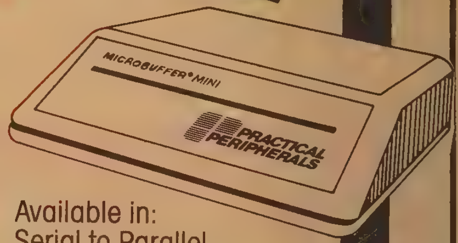
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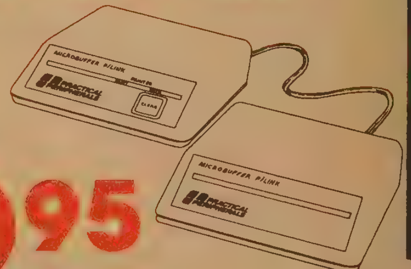
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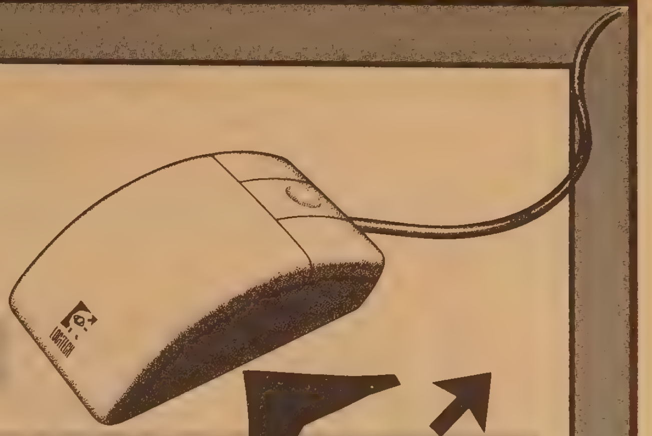
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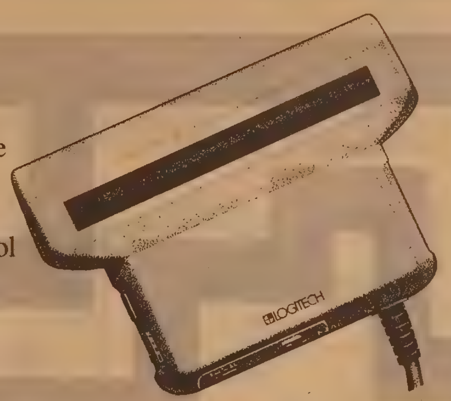

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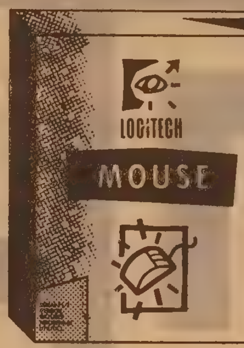
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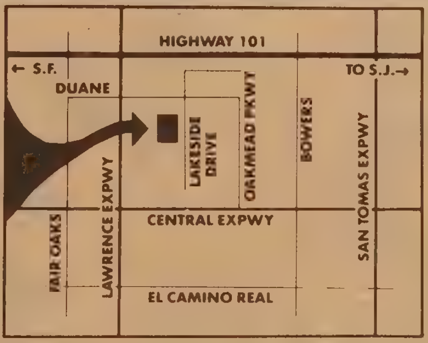
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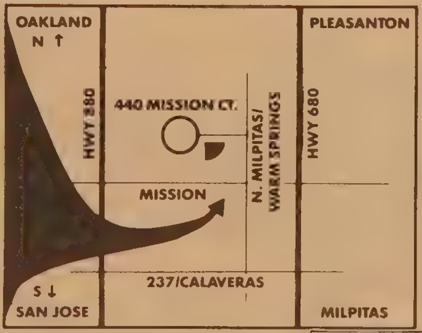
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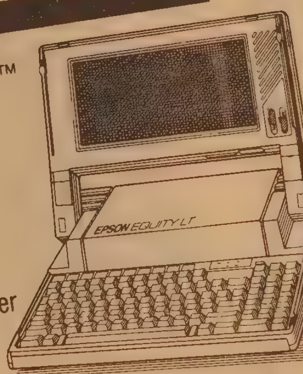

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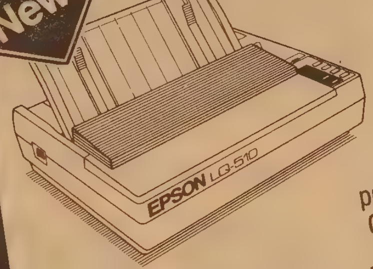

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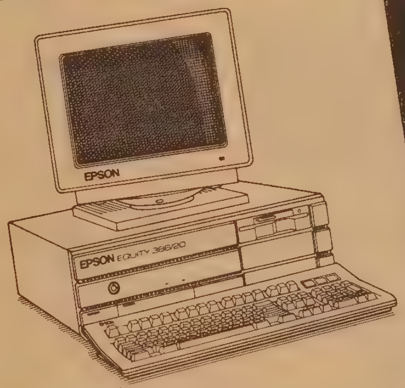

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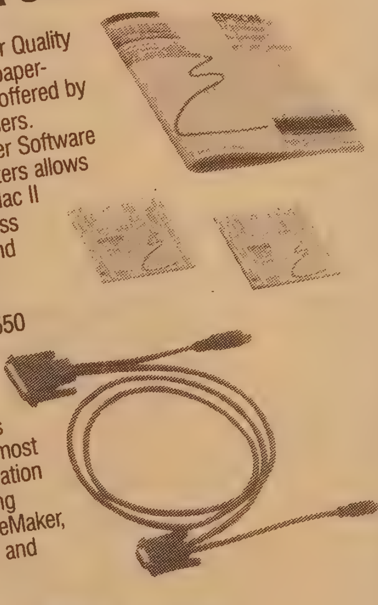

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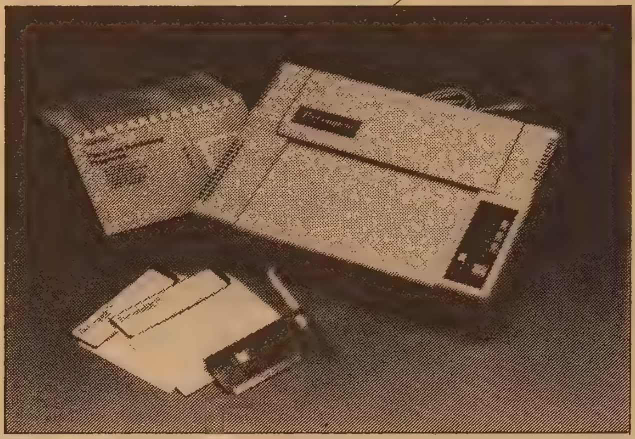

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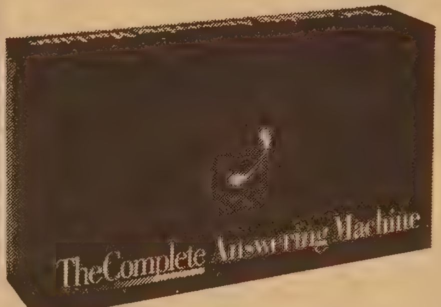

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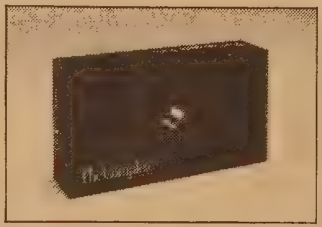

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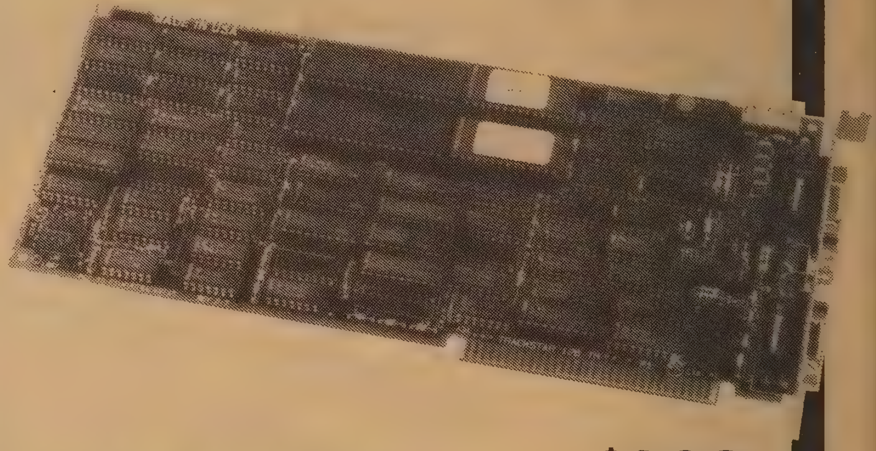

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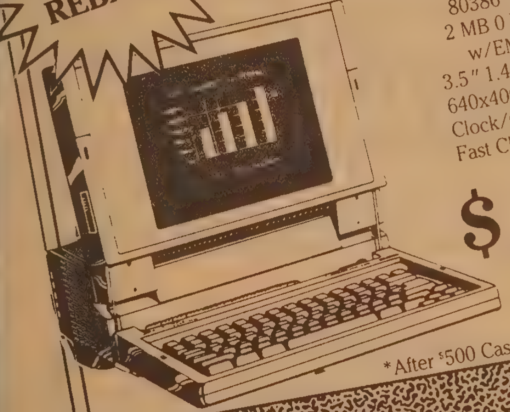

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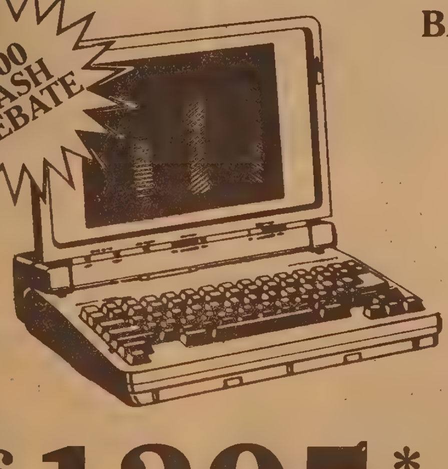

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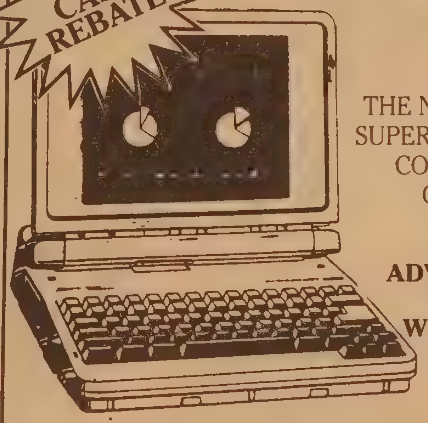

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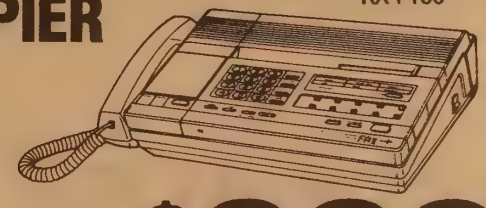
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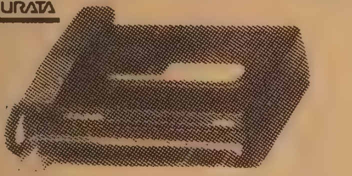

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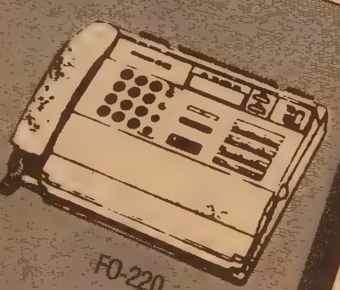
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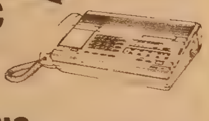

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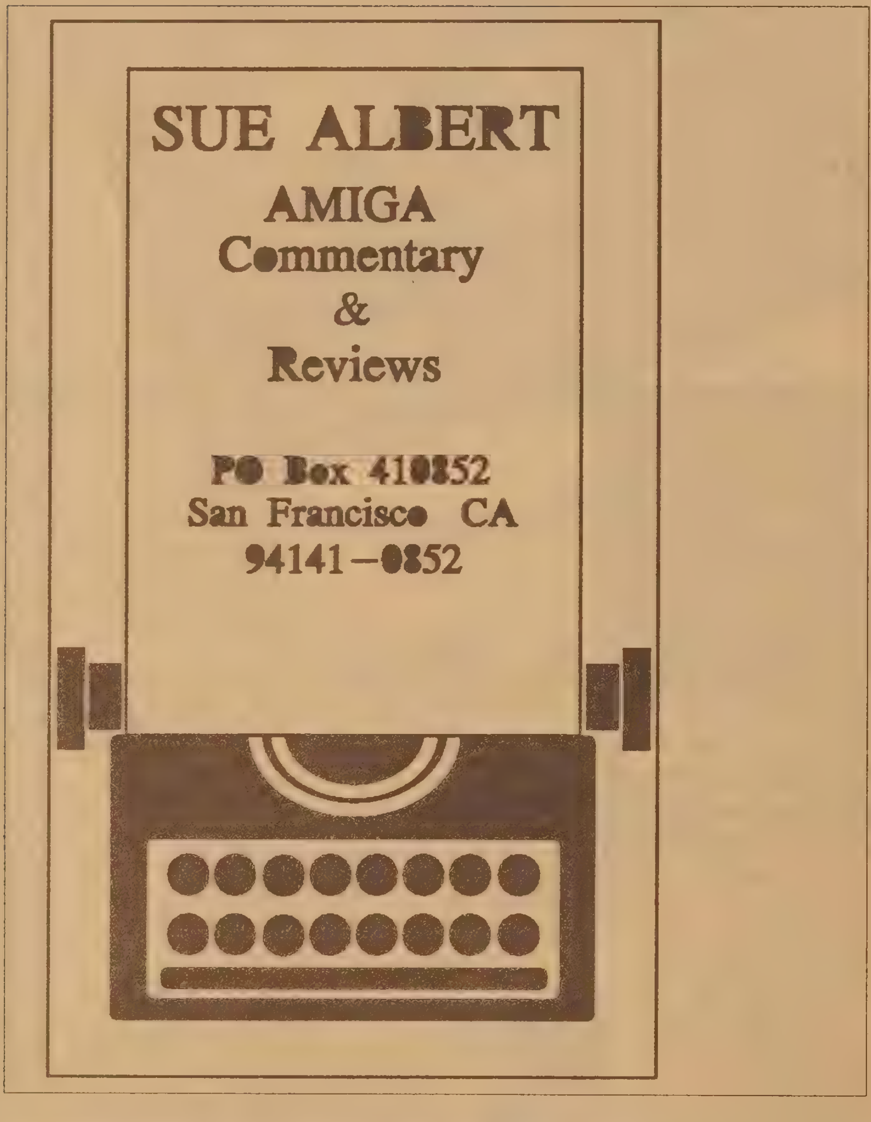
The Pros Look At Professional Draw

By Sue Albert



Completed business card designed with Professional Draw on Amiga showing filled letters.

The Amiga community is resigned, if not happy, about waiting for the applications other computer users now take for granted. We waited impatiently for a heavy-duty desktop publishing program and finally got Gold Disk's *Professional Page,* now widely used to create Amiga periodicals.

It has taken Gold Disk another year to produce what it considers a serious structured drawing program to integrate with *Professional Page.* The recently released *Professional Draw* promises to give the Amiga powerful PostScript-compatible tools to trace fonts and bitmaps for production of scalable, jaggie-less lettering, logos, and illustrations. The intent is to move the Amiga all the way into standard full-featured desktop publishing. *Professional Draw* is positioned to compete with the more costly "big" market products like *Adobe Draw* and *GEM Draw,* now solidly entrenched and in their second or third revisions. Like *Professional Page* in its first incarnation, *Professional Draw* is a mixed bag of delight and disappointments. Though it cannot yet stand up to the top-of-the-line packages, it's not chopped liver, either. It has some winning ways.

In the week I dedicated to testing *Professional Draw,* I found my frustrations balanced by gratifying success and creative fun. The opinions gathered from desktop publishing professionals and other Amiga users were all over the map.

Your Type Too

I started with a visit to the Your Type Too desktop publishing service in Oakland, where I borrowed a cup of Amiga expertise from owner Malcolm Lowe. Malcolm offers service on the IBM as well as the Amiga. He first showed me two structured drawing programs available for the IBM, *GEM Draw* ,and *Micrografx Designer.*

To demonstrate, Malcolm duplicated my old business card with its bold Susan Lamb graphic, created originally on the Commodore 64 with *GEOPublish.* It was badly in need of an update, and he adroitly produced a laser printed page suitable for copy machine multiples in about an hour—including the time he spent patiently demonstrating the many features of *Micrografx Designer* ($695) and *GEM Draw* ($299).

When we switched to his Amiga 1000 and *Professional Draw,* it was s-l-o-w-e-r g-o-i-n-g. Malcolm's first comment was that *Professional Draw* suffers from poor memory management. This criticism was also leveled at *Professional Page* and seems to be a signature of Gold Disk programming. *Professional Draw* takes it to extremes; it sometimes felt like we were working "8 bits short," waiting through the tedious redraws.

Malcolm's overall view was that *Professional Draw* lacks some essential features and suffers from a nonstandard approach on others. He found the sizing system "unnatural" and page movement clumsy. He did admire the easy onscreen color and "add a control point" feature that both *Micrografx Designer* and *GEM Draw* lack.

Giraffe-X

At home I practiced by trying to duplicate my business card on the Amiga with *Professional Draw.* As I worked, some of the features that had seemed impossible, obtuse, or just plain absent became clear and eventually a pleasure to use. The program didn't speed up, but I did.

The Bezier curve gadget revealed itself to be a very subtle tool for creating elegant curves. This and the sizing gadget must be approached like a Zen paradox. When you finally grasp the process, it will all seem simple and obvious. There are unique and subtle minds at work at Gold Disk.

I took my first file to be laser printed by Richard Repas, the Amiga "Department" at Giraffe-X desktop publishing service in San Francisco. He voiced similar mixed reactions to the program. He faulted the speed of the

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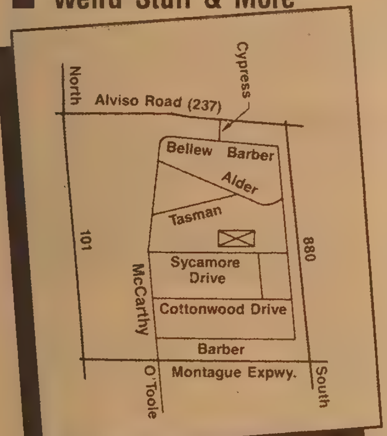

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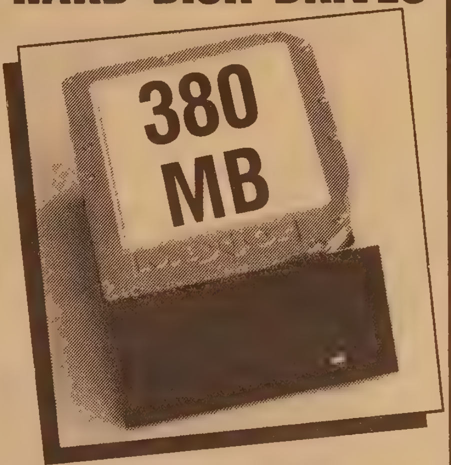

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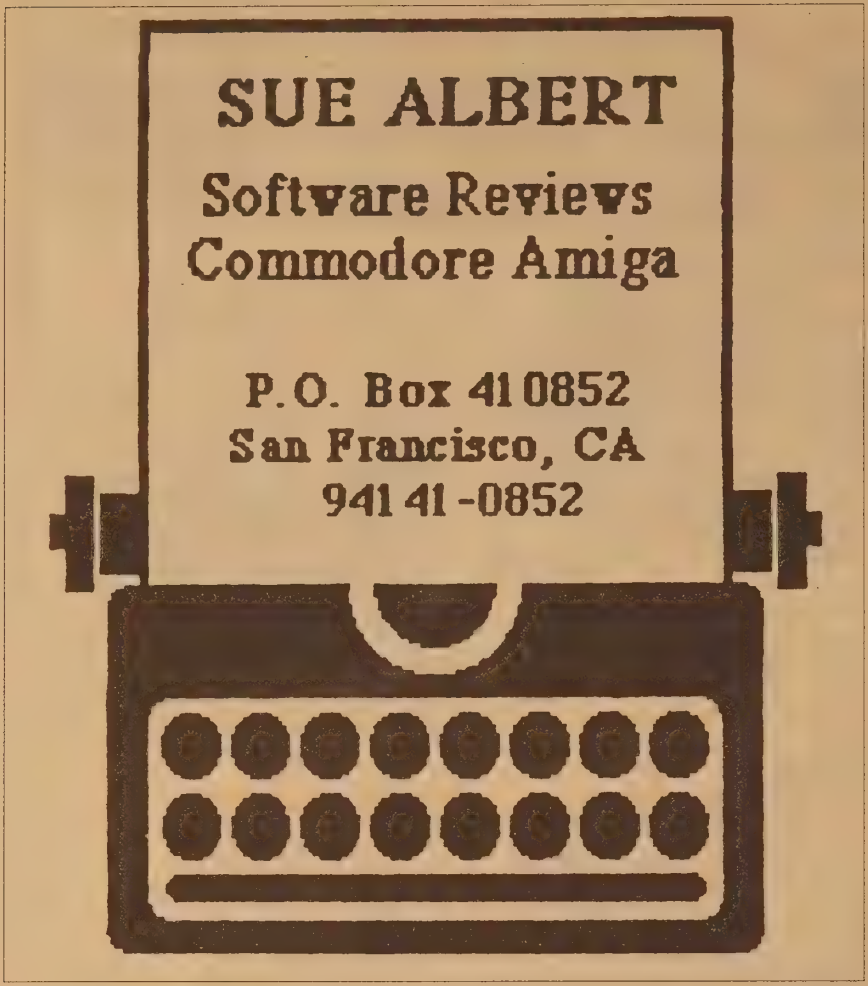

Original business card with Susan Lamb graphic created with GEOPublish on Commodore 64.

program, speed being essential to his business, but he is glad to have the ability to easily trace fonts and logos he can file and later scale to any size for multiple uses. He is particularly enamored of the Bezier curve tool, and impressed that *Professional Draw* will output the Encapsulated PostScript File protocol. Though no Amiga programs currently accept EPSF, it will prove to be a practical feature as more programs are developed and when the "due any moment" A-Max Macintosh Emulator hits the store shelves.

Computer Showcase

At the Computer Showcase, an Amiga store in San Francisco, I gathered more reactions.

Richard Feeney is a graphic designer. He too appreciates having the program, but he was dismayed when he encountered difficulties getting accurate alignments using the snap-to-grid feature. When an object is dropped, its edge will not always snap precisely on the grid line. I found some "diddling" helped. Grabbing a box by the upper left control point seemed to work best. Richard now bypasses the snap-to-grid; instead he double clicks on the null pointer to set precise coordinates for selected object placement.

He also pointed out that the two Agfa Compugraphic Corporation Fonts included within the program have white fills in the center of letters like "D", "O", "P", and "e" that are not transparent when laid over other objects. They can be touched up (more diddling)...but what a bit of exquisitely bad planning.

While at the Computer Showcase, Bodega Bay artist, Jackie Koehler, had kind words for the program. She found *Professional Draw* subtle and exciting; she loved being able to lay text around a circle. She was only disappointed that *Professional Draw* lacked gradient and pattern fills.

Most of the users I surveyed put fills at the top of their feature wish list, right behind greater speed and a last-action-undo button. Many were concerned that there seemed to be no accommodation for adding more fonts. The Compugraphic outline fonts are exceedingly large files; when I entered down-scaled text to my completed card, the file of 132 objects took up a humongous 398,762 bytes of disk space. With files this size, the file requester provides only an approximate disk gauge instead of an accurate count of remaining free bytes.

Other desirable features for the upgrade list include an auto-trace function, click-on horizontal/vertical alignment to-center for multiple objects, and mapping of fonts to shaped lines.

Update On The Way

Somehow I had missed the subtle clue in the ads Gold Disk ran the past few months, which revealed the startling news that *Professional Draw* will not integrate with *Professional Page* 1.2. Flabbergasted, I called Burton Robson at Gold Disk. Burton sang that golden oldie computer users know so well—"a new and improved version 1.3 of *Professional Page*, compatible with *Professional Draw*, will be available in a matter of days..." AKA "the disk is in the mail."

When the upgrades appear, they will cost registered *Professional Page* owners a reasonable $20-$25. Owners with service warranties, or those who took advantage of Gold Disk's sparingly publicized (some say "secret") pre-publication offer, will get free upgrades.

Since *Professional Draw* is the *only* powerful PostScript-compatible structured drawing program presently available for the Amiga, users have no choice but to bite the bullet and make do. Some may beat their breasts and whine a bit. A few will defect to the higher priced spread. Others will get busy, work around the flaws and create beautiful and useful clip art to share. In the meantime, we can all raise a hue and cry that will nudge Gold Disk into rapidly upgrading this program to a level truly deserving the title "Professional." ■

Resources

Professional Draw, $199.95

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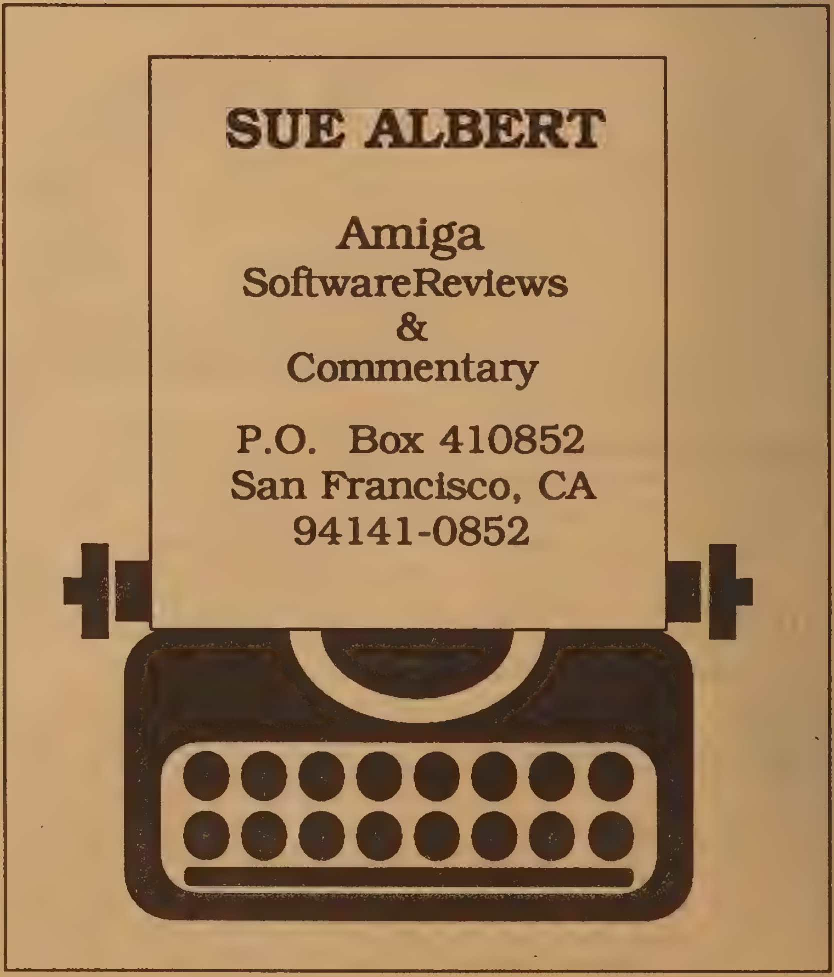

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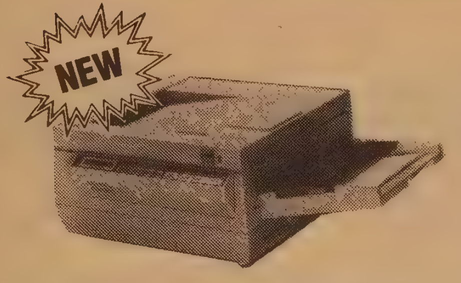

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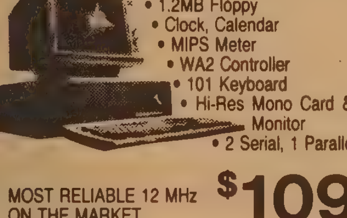

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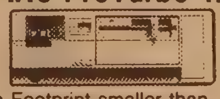

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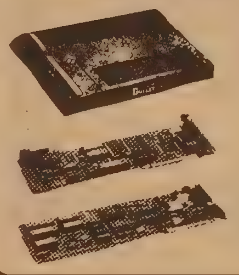

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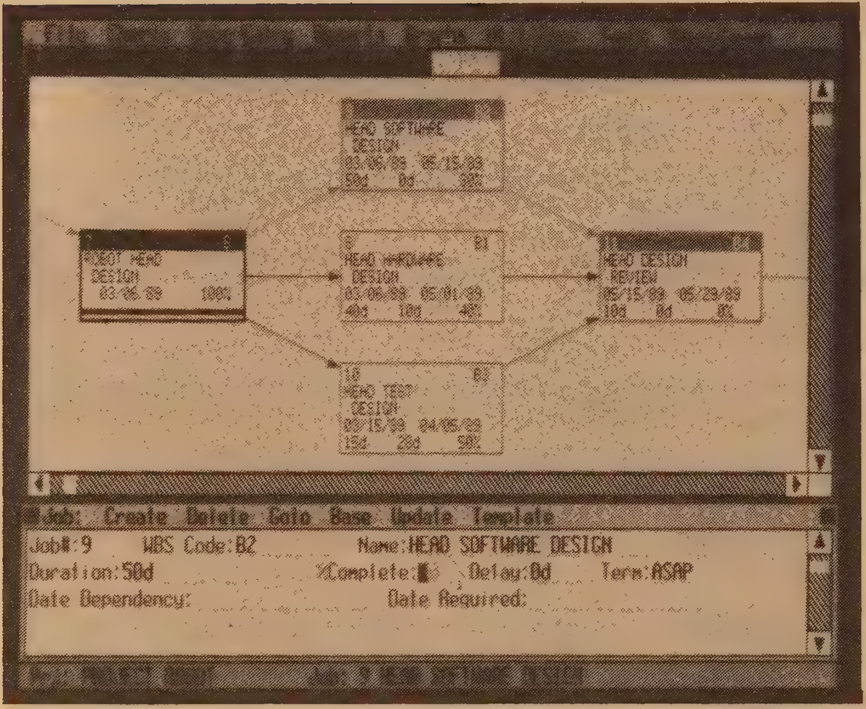
Project Scheduler 4

User-configurable Project Management In A Windows-like Environment

By Woody Liswood

On the surface, *Project Scheduler 4* is one of the easiest to use project management software packages I have found. Beyond that, the product's *Windows*-like interface is exemplary in terms of clarity, ease of use, intuitiveness and, most importantly, speed. Perhaps most importantly, *Project Scheduler 4* does everything that the project planner needs to keep things organized.



Job#:9 WBS Code:B2 Name:HEAD SOFTWARE DESIGN
Duration:50d %Complete: Delay:0d Term:ASAP
Date Dependency: Date Required:

Changes made in a PERT or GANTT chart are automatically entered in related windows.

Project Management Terminology

Let's review some terms. A project is a set of activities, occurring sequentially or simultaneously, all related to a common goal.

Project planners use various methods to get their project ideas onto paper. GANTT charts, which show a timeline of activities, are found in almost all project planning programs. Network diagrams, also called PERT diagrams, are also common. The main difference between GANTT and PERT is that GANTT shows a time-sensitive sequence of activities, while PERT shows the dependencies—those activities that must take place before another can happen, and those activities that can happen only after another occurs. PERT techniques also allow the project planner to estimate the probabilities that a particular activity will start and finish on time.

While all this is happening, the project manager must ensure that the resources (people and materials) are at the right place at the right time so that all these activities can be carried out on time.

Project Scheduler 4

Project Scheduler 4 has all the capability and much of the capacity necessary to manage large projects. Since most of us work on more than one project at a time, *Project Scheduler 4* also allows multiple projects to be loaded into memory simultaneously, share a common resource table, and display each project as a separate GANTT line. Another bit of sophistication is what *Project Scheduler 4* calls "sub-project summarization" where you can summarize all of the details of a smaller project into a single activity of a much larger project.

If you are familiar with the Microsoft *Windows* environment, you'll be comfortable with *Project Scheduler 4* right away, even though it does not run as a *Windows* application. There are minor differences from the *Windows* approach to mouse handling; these are not critical, but do make for some differences.

Project Scheduler 4 boots to a familiar blank screen with a set of pull-down menu items across the top of the screen. (Many programs now claim these types of pull-down menus as conforming to the IBM SAA architecture.) As expected, the FILE menu is the first item; here you can save, load, create projects, and set up devices. When you define a new project, you must select either forward or backward scheduling—forward scheduling uses the convention start date and end date format, and backward scheduling causes the start date to become the end date for the project.

If you are familiar with the Microsoft Windows environment, Project Scheduler 4 will show you what Windows should have been.

Printer and plotter selection is done during installation. You cannot modify your choices from within *Project Scheduler 4*. Then, when you go to print, you only get two choices, your graphic/text printer, or your plotter. During installation you also define what type of mouse, if any, you use.

Entering data into *Project Scheduler 4* can be done either through a GANTT chart or a Network diagram approach. Both work equally well. In a separate window across the bottom of the screen, you assign the activities number, WBS code if you are using WBS (work breakdown schedules), activity name, duration, completion (if the activity is currently in progress or already completed), delay, priority (such as ALAP or ASAP), and any date dependencies necessary.

In the GANTT chart, you have scroll bars to move around the chart. There are a variety of shapes, sizes, and colors used to define the different types of GANTT activities. For example, a critical activity is a thick hollow rectangle outlined in red (or black if you have a monochrome monitor). A milestone is a thick red diamond for critical tasks, a thin blue diamond for non-critical tasks, and a solid green diamond with a black outline for completed tasks. There are also separate elements for non-criti-

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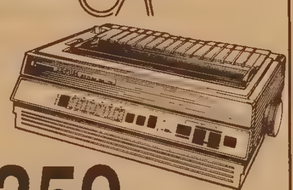

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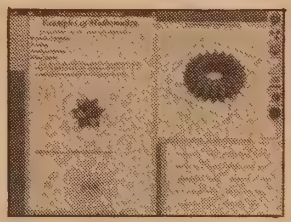

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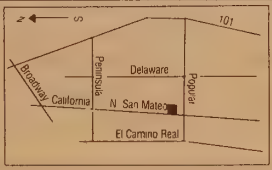

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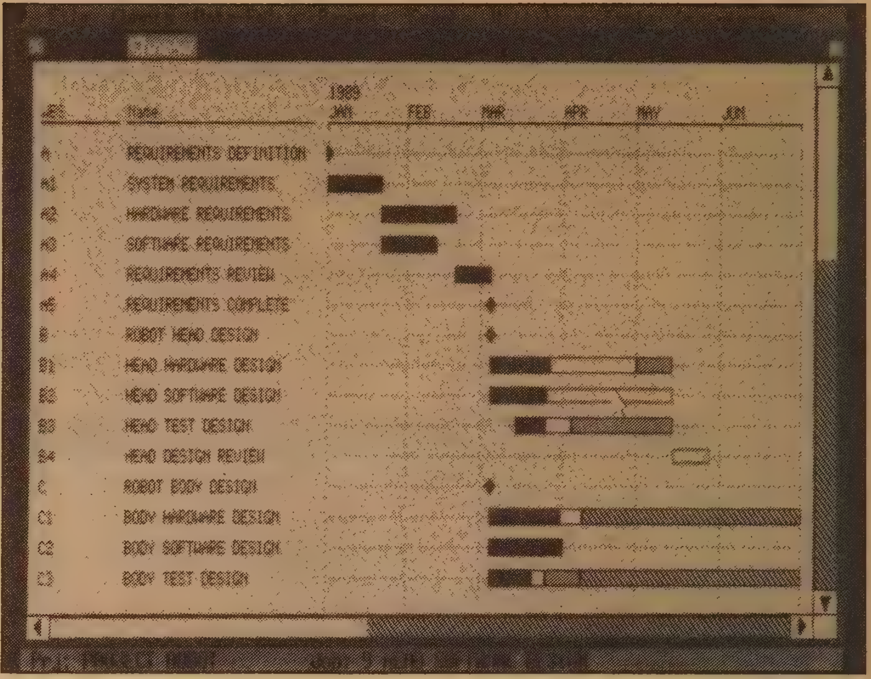
cal activities, work completed, free float, total float delays, negative slack, conflicts, and any baseline you are working against.

GANTT and PERT are fine for entering a project, but I much prefer the outline metaphor, which allows me to enter activities and move and edit them much more easily than manipulating them after they are already in the GANTT or PERT arena. It is a real trade-off. *Project Scheduler 4* works so quickly and easily with the mouse and the GANTT and PERT charts that maybe you really don't need the outline, but I still miss it.

Project Scheduler 4 offers a variety of choices you can use to customize the software to your own individual working habits and needs. You can set the GANTT screen to show the time intervals you want, to use any WBS filter code you wish, to show WBS summaries, to show date lines, to use either WBS codes or job numbers, to set the length of the displayed activity name, and to show baselines, free floats, total floats, or delays. These options are selected with mouse click, as if you were in any *Windows* program.

Opening another dialog box will let you set dependencies within the GANTT chart. *Project Scheduler 4* uses FF for finish to finish, FS for finish to start, and SS for start to start dependencies. Finish to Start means that a predecessor activity must finish before the next dependent activity can start. In setting these dependencies, you can also specify any lead or lag time involved.

Another dialog box lets you allocate resources to the current activity. According to the documentation, you can assign as many resources to an activity as you wish until you run out of memory. However, the resource table will only hold 500 resources. As you add resources, you can specify a RBS (resource breakdown structure) code that works in a similar manner to the WBS codes. Also specified are the start time or date of the resource utilization and the duration of the resource. For controlling the project, you can also have a unit rate allocation set, as well as total units, total cost, actual resources used, and actual costs of the resources.



GANTT charts can be broken down over time periods from minutes to years.

A frequent occurrence during project planning is that you remember one thing when you are doing something else, or you make a change, but cannot remember what that change was three weeks from now. *Project Scheduler 4* has a notes window that lets you add notes for each activity in the project—so if you do make a change, put in a note to yourself, or the person who follows you, and save everyone a lot of grief.

A histogram window can also be called to fit directly below the

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GANTT chart. Using the histogram will show you the utilization level of any or all specified resources. As you click on a particular activity on the GANTT chart, the histogram will change automatically to show you how the new activity is using resources.

In the Network diagram, *Project Scheduler 4* shows each activity as a series of connected boxes or nodes. In each box, you are shown the name of the activity, the start time, and the duration information. For the most part, you can display four or five boxes at a time on the screen. The screen positions are preset and you cannot move them around as you can in *SuperProject Expert. Project Scheduler 4* also uses color to tell you what type of node you are looking at, with separate colors for critical, completed, non-critical, and milestone nodes.

Project Scheduler 4 also includes four zoom levels, with each level showing less information, but more nodes on the screen. The third zoom level shows the most nodes, but does not display any information within the node box.

When working with networks, you have full power to link, move, delink, and remove any activity you are working with.

A separate dialog box lets you set the project calendar for your organization's particular work week and schedule. *Project Scheduler 4* will let you work from January 1, 1980 to December 31, 2019. Unlike some of the other project planners on the market, this one lets you have a separate calendar for each resource.

Project Scheduler 4 lets you import and export data in *1-2-3, dBASE III Plus*, or a comma-separated value ASCII format.

Lastly, *Project Scheduler 4* has a context sensitive help system, with the added feature that you can have three different levels of help available. When you first run the program, the help system is set in an assistance mode. Every time you click on a menu item, you are shown a help screen about what you just clicked on and told what the program expects at that point. While interesting, this tends to get annoying pretty quickly. Turn it off. Click on help and setting the mode for normal help is enough for most purposes.

The documentation is adequate, though somewhat annoying in that it has one complete set of instructions for the mouse user and one for the keyboard user, when some integration would have been more convenient. There is a command reference as well as an excellent tutorial.

However, *Project Scheduler 4* uses its windowing interface so logically, so quickly, and so easily that you may never need to refer to the documentation if you are at all familiar with any of the other project planning programs on the market. If you are familiar with the Microsoft *Windows* environment, *Project Scheduler 4* will show you what *Windows* should have been. In fact, I only looked at the documentation so that I could write this article. I never did need to look up anything to use the program.

Reporting And Printing

For reporting and displaying information, you can use a number of filters to select the exact information you need for a particular purpose. You can filter around WBS codes, job numbers, RBS codes, resource numbers, resource types, as well as a multitude of dates such as early start, early finish, late start, late finish, baseline start, baseline finish, and completion dates. Other filters could be critical or non-critical tasks, milestones and non-milestone tasks, or filtering based on the percentage completed for the various activities.

Project Scheduler 4 offers a variety of choices that you can use to customize the software to your own individual working habits and needs.

When you want a GANTT or a Network chart, you can do what *Proj-*

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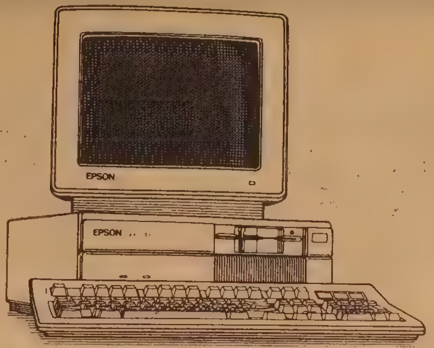

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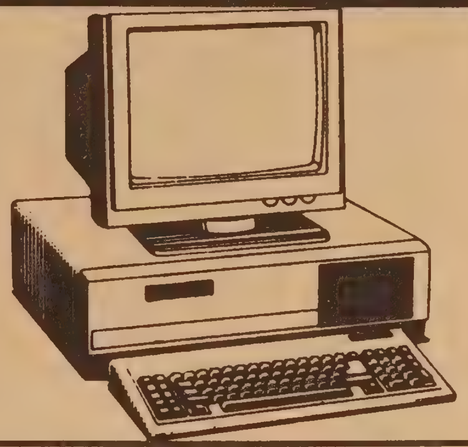

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ect Scheduler 4 calls a graphical print (printing to a printer) or a plot that goes to the selected digital plotter. You can also print reports to the printer or the screen.

Project Scheduler 4 has an excellent columnar report design facility. In the job column report window, each of the allowable fields from the database is displayed along with the field's width in characters. As you click on fields to select them for the report, the allowable width of the report based on your paper size is shown, along with the cumulative effect of the column width you have selected.

Project Scheduler 4 manages a number of critical functions through what it calls a utility menu. Like all good project planning programs, it lets you declare a particular plan as a benchmark or baseline, then measures all changes you make to the plan against that baseline. You can also set all activities to ALAP or ASAP through the utility menu; you can also level all resources here and remove all delays in a project. If you level resources, *Project Scheduler 4* will automatically adjust and delay the start time of predecessor jobs based on the information you have supplied about each resource in the resource table.

PERT fanatics can assign a set of value weights to each activity, generating an optimistic, a most likely, and a pessimistic report. Then, using the PERT valuation analysis, you can create GANTT and Network diagrams based on these three potential scenarios.

Printing is worth noting, since the printed output of *Project Scheduler 4* is its weakest element. The program produces standard looking reports. However, when producing the graphic GANTT chart or network diagrams, *Project Scheduler 4* builds its own bit map in memory, using its own fonts before transferring to the printer. On my LaserJet II, the output was barely acceptable, and not of the quality I would like to use in a formal presentation to management. Selecting a H-P 7475 plotter gave me higher quality results, but that is not the best answer for presentations. Nor was there an option to produce fancy single-page charts with the page completely boxed, as does another one of my favorite project planners, *InstaPlan.*

Scitor's technical department said that the best output was through a PostScript printer. I don't happen to have one around, but I did have *GoScript*, a separate printing program that will take a EPS file (Encapsulated PostScript) and print it to a HP LJ II as if it were a PostScript printer. It works fine, but it's necessary to print the PostScript printer file to disk, exit *Project Scheduler 4*, then print using *GoScript.* Not an elegant solution but still workable.

There is a better solution if you own a HP LJ II. Purchase the HPGL "Plotter in a Cartridge" cartridge manufactured by Pacific Data Products (619/ 552 - 0880). Then, tell *Project Scheduler 4* that you have a HP plotter connected to the port you use for the Laser Jet. You'll get excellent looking plots in a few seconds, and they'll be of much higher quality than the built-in ones of *Project Scheduler 4.* Now, if the *Project Scheduler 4* folks would recognize the cartridge as a specific output option, they could use the HP internal fonts in place of the stroke fonts of the laser, and things would really cook. While they are at it, they might also gussy up the printouts and registration marks to help in aligning multipage printouts that are to be cut and pasted together.

Conclusions

In summary, *Project Scheduler 4* is a heavyweight in the areas of interface and complexity. While it is an in-memory system, which limits its ability to handle super large projects, it works with mid-sized projects as well as any other program out there, and better than most of them. If you are into project planning, you owe it to yourself to give *Project Scheduler 4* a close look.

I worked with *Project Scheduler 4* using a ALR 20 MHz 386, with 2 Mb of memory, a Microsoft bus mouse, and a Vega Seven EGA card with an UltraVision VGA add on board. No problems. (Scitor Corporation, 250 Lincoln Centre Drive, Foster City, CA 94404, 415/ 570 7700. ■

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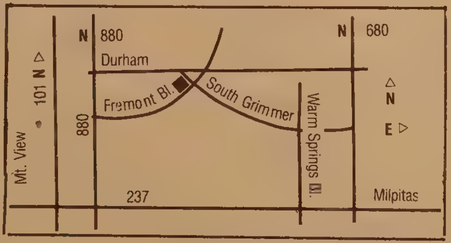

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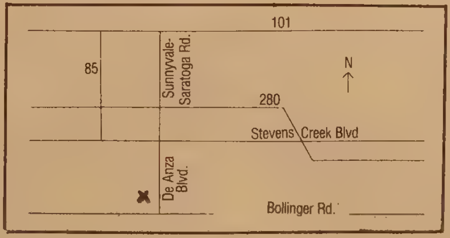

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Great Games

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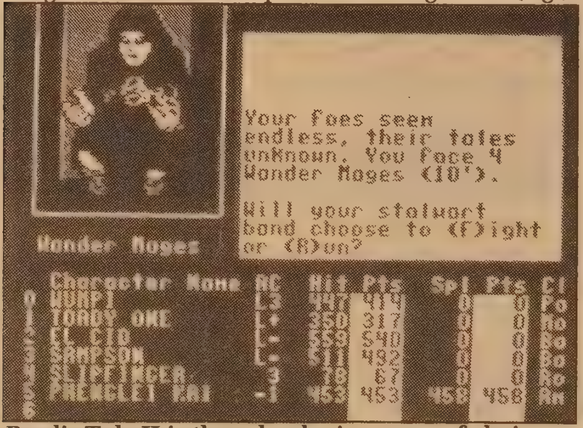
By Tom Cox

Bard's Tale II

The Destiny Knight
Electronic Arts
(Role Playing)

The premise of *Bard's Tale II* is that you're entrusted with the time-honored task of saving the world. The powerful Destiny Wand, source of 700 years' prosperity, has been stolen. You must locate its seven pieces, reassemble the Wand, and destroy the evil Archmage.

As a typical swords-and-sorcery yarn, *Bard's Tale II* contains the expected assortment of character types, such as fighters, magicians, and thieves. Magic users can learn spells and change class (e.g., from Conjurer to Sorcerer), thus acquiring entirely new kinds of spells. Anyone with an interest in Tolkien or the fantasy genre will find *Bard's Tale II*'s role playing appealing.



```
Your foes seem
endless, their fates
unknown. You face 4
Wonder Moges (10').

Will your stalwart
band choose to (F)ight
or (R)un?
```

```
  Character Name  AC  Hit Pts   Spl Pts  Cl
0 WUNPI           L3  447  414    0    0 Pa
1 TORDY ONE       L-  350  317    0    0 [illegible]
2 EL CID          L-  559  540    0    0 [illegible]
3 SAMPSON         L-  511  492    0    0 [illegible]
4 SLIPFINGER       3   78   67    0    0 Ro
5 PRENCLEI KAI    -1  453  453  458  456 [illegible]
6
```

Bard's Tale II is the role-playing game of choice for D&D-type adventurers.

The action comes in two phases: general movement (around city streets, wilderness, or dungeon corridors), and combat.

Combat is done in classic *Bard's Tale* fashion: at the beginning of a battle round, you specify a move for each character. During the round each character and each opponent gets to act out the move, with faster characters (such as thieves and monks) generally going first.

The plot line of *Bard's Tale II* is complex, and won't be solved quickly. It provides a good number of smaller challenges, and each of those may contain puzzles of their own. Overall, the game is well designed and extremely well executed, and would make an excellent addition to almost anyone's game library.

Bard's Tale II earns a Long Term Challenge score of five; a Learning Curve score of three, and an Intellectual Challenge score of five. (*Bard's Tale II*, IBM $49.95 for 5 1/4" disks, $54.95 for 3 1/2"; Apple II and IIGS, $49.95. Also available for other machines. Published by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404; 415/571-7171.)

Wasteland

Electronic Arts
(Role Playing)

Like most adventure role playing games, *Wasteland* puts you in the position of having to save the world. Specifically, to save the post-nuclear-holocaust world from a mysterious invasion of deadly robots.

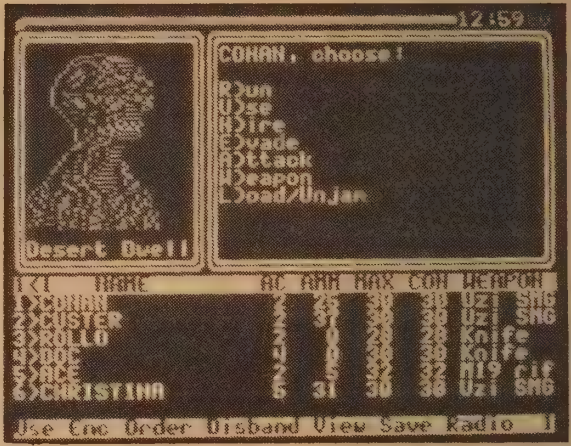
Benefiting from the rich heritage of post-holocaust literature and movies such as *Mad Max*, *Wasteland* provides all the blood, violence, bombed-out buildings, automatic weapons, and dangerous adversaries anyone could want.

The play is typical of microcomputer role playing: an excellent combination of fast, shoot-'em-up action with long-range exploration and puzzle-solving. While it is possible to become bored with the blazing and blasting, the overall mystery is cleverly laid. For example, at one point you must solve a guessing game, and then a wordplay riddle, to uncover a major plot twist.

Wasteland uses a playing format similar to the *Bard's Tale* and *Sorcery* games. The player guides a group of up to seven characters; each character has strong and weak points and each grows and changes with time. Much of the action involves the use of objects acquired during play.

For the price of a couple of movies or a dinner out, you can get a top-of-the-line game that will provide hours of entertainment. If you have a computer player on your shopping list, it would be hard to justify *not* getting them a copy of *Wasteland*.

Wasteland earns a Long Term Enjoyment score of four, a Learning Curve score of two, and a Puzzle Factor rating of five. (*Wasteland* is $49.95 for Apple II and IBM 5 1/4" versions; IBM 3 1/2" format is $54.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. 415/571-7171.)



```
COHAN, choose:

R)un
U)se
F)ire
E)vade
A)ttack
W)eapon
L)oad/Unjam
```

```
I<I  NAME          AC AMM MAX CON WEAPON
1>COHAN            [illegible]        Uzi SMG
2>CUSTER           [illegible]        Uzi SMG
3>ROLLO            [illegible]        Knife
4>DOC              [illegible]        Knife
5>ACE              [illegible]        M19 Clf
6>CHRISTINA         6  31  30  30     Uzi SMG
```

Wasteland requires you to perform world-saving feats in a nuked environment.

How Games Were Scored

Each game was considered as part of a category, such as arcade, strategy simulation, or role playing.

How well it rates within its type is determined by a three-part scale. (Note: price is *not* included in the overall performance rating.)

Each game is given a rating, from a low of one to a high of five, for its value as a source of long-term enjoyment.

The second rating is for the game's learning curve, indicating how difficult it is to get started enjoying the game.

The third rating is different for each category of game. Arcade games are rated on their action, graphics, sound, animation, and realism. Role playing games are rated on their character development, and the difficulty of the puzzle you are expected to solve. Strategic simulation games are rated on their realism, and strategic and tactical challenge.

These three areas should give you some idea of how well the game performs overall. You should also compare performance with price if you're thinking of buying one of these games.

Net Hack For The PC

Public Domain
(Role Playing)

Net Hack is the offspring of *Rogue* and *Hack*, two mainframe-based games developed at US universities in a collaborative effort over several years.

Unfortunately, because these games were developed on mainframes and include the game ideas of

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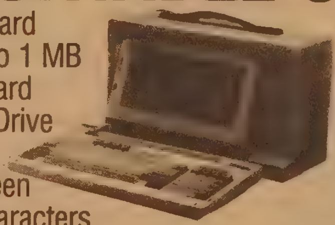

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hundreds or thousands of people, they are huge, and can not generally be run without a hard disk.

Not long ago, some hackers on the Usenet (a network of UNIX-based computers) suggested that all the regional "flavors" of *Hack*, including the customizations each university had used to spice up its copy of the game, be combined. The result, *Net Hack*, was ported to the PC and can be downloaded from a number of Bay Area bulletin boards.

Net Hack has since been overtaken on UNIX machines by *Omega*, which may be the ultimate in monstrous and complex computer games. For the moment, PC users will have to make do with *Net Hack*, a game that might wear thin in a year or two.

The goal of *Net Hack* is to descend to the lowest level of a dungeon, kill the evil Wizard of Yendor, take the Amulet of Yendor, and escape into the world above.

You start the game by creating a player character, choosing from a number of different classes including Valkyrie, Ninja, Wizard, and Cave-person. Each character class starts with a different set of possessions and attributes, so choosing the right type to fit your playing style becomes important. Slash-and-hack players will enjoy the Knight or Cave-person; more subtle players may prefer the Tourist or Speleologist.

The game itself has two remarkable features: its sense of humor, which borders on the bizarre, and its obscurity. If you are familiar with the video arcade game *Gauntlet*, you may experience deja vu when your Wizard is seriously hurt and the game tells you "Wizard, your life force is running out."

As for its obscurity, well, the game was designed in an academic setting. If you got stuck, there was always someone around who knew what the answer was. It seems doubtful that a lone player of the PC version will be able to figure these things out—for example, when you run into Larry, Moe, and Curly, you shouldn't eat them or the monsters will become aggravated. Or if a cockatrice is turning you to stone, you can undo the process by eating a freshly killed acid blob.

Net Hack earns a Long Term Enjoyment score of four, a Learning Curve score of one, and an Intellectual Challenge score of five.

Net Hack is free, available from local bulletin boards.

Begin

Shareware

(Tactical Simulation)

Begin is a simulation of a *Star Trek*-type starship commander's training. In *Begin*, you choose how each side of an encounter will be armed, and you take command of one side while the computer commands the other. The computer, by the way, does its level best to kill you.

As a simulation, *Begin* is difficult to rate because no one has ever really commanded a starship. One notable deficiency is the lack of a three-dimensional playing field, as would be the case in a "real" space battle. As entertainment, however, *Begin* is excellent—and it provides an almost endless challenge.

As commander of your ship, and possibly of a fleet of ships, you must keep constant track of what is going on all over the battlefield. The computer tracks a number of the details for you, which helps, and provides both a listing of ship positions and a graphic display of ships, torpedoes, and probes.

With *Begin* you are not playing against a clock. The enemy gets one move for every move you make, but you can take your time making it. However, you need to be careful *which* move you make, because you may need to choose between telling your own bridge crew to fire torpedoes and telling half your fleet to change course.

As a long term investment, *Begin* rates a five—and I'm tempted to go off the scale and give it a six. Ten dollars is a fantastic price for this much enjoyment.

Begin earns a Learning Curve rating of three, as much because of its flexibility in letting you choose easy or hard scenarios as for its inherent simplicity.

And *Begin* rates a four in Strategic and Tactical Challenge. This is a game that can try the mettle of the foxiest commanders.

Begin is available from a number of computer bulletin boards and CompuServe. The shareware fee is $10, payable to Clockwork Software, P.O. Box 610338, San Jose, CA 95161.

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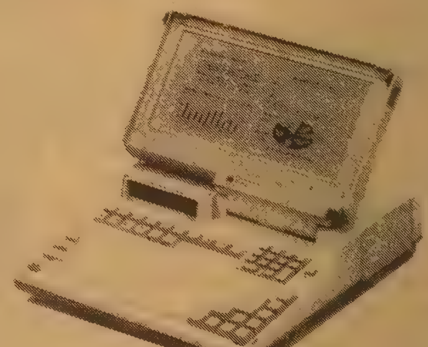

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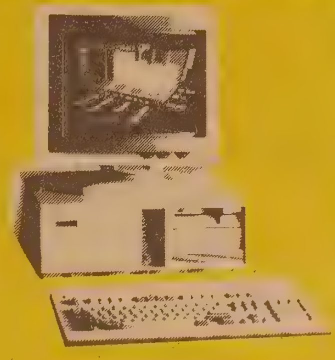

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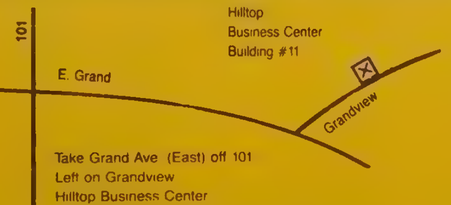

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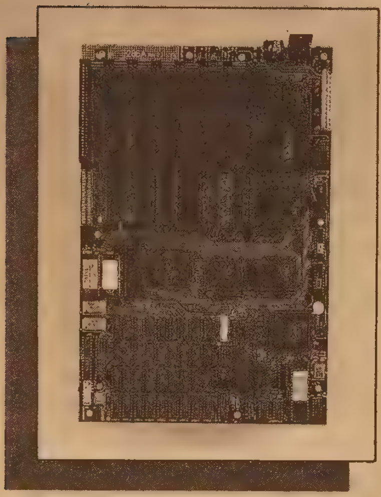

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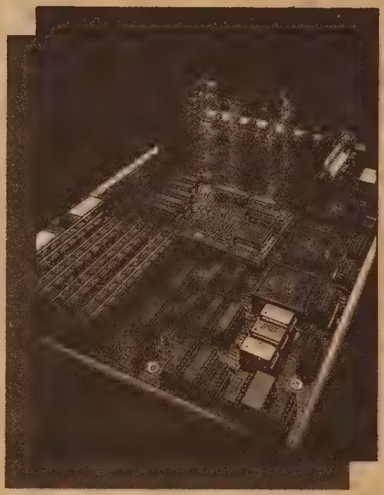

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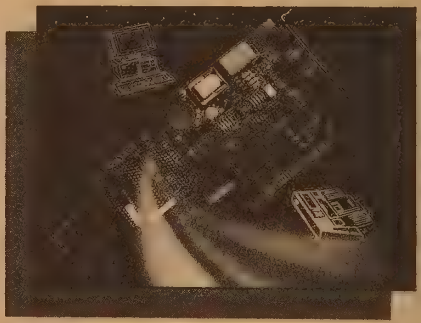

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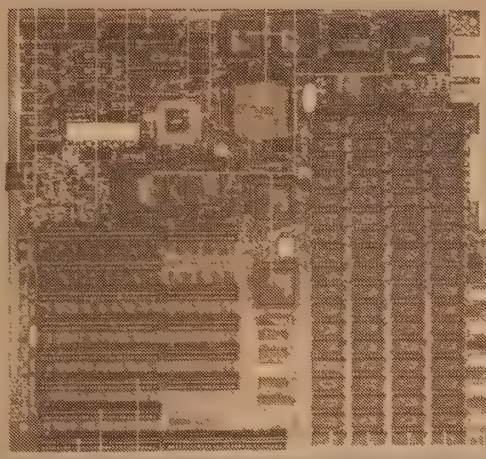

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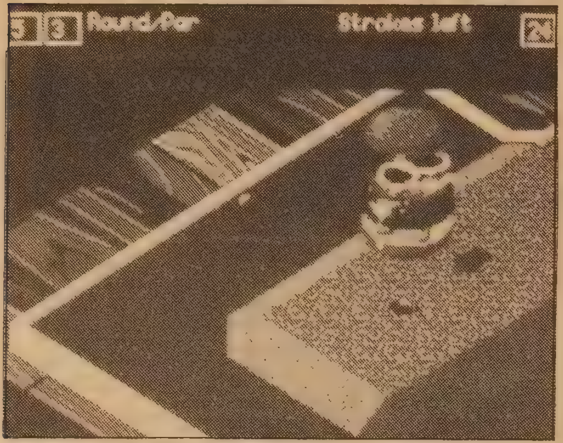


Zany Golf is fun to play alone or with friends.

Zany Golf

Electronic Arts

(Miniature Golf)

Zany Golf may be one of the few good computer games that is even better to play at a party.

Zany Golf is a miniature golf game. It's all played with a putter (in my case, the Apple II GS's mouse) and involves knocking a small ball around various absurd obstacles and into a hole.

One of the game's fun features is its theme music. Each hole in the course has its own catchy, funky music, and I was tempted to tap the GS sound output into my stereo.

If you've ever played miniature golf, the IIGS version of this game makes you wonder why anyone would buy any other computer. The graphics and the sound are near-arcade quality.

Zany Golf earns a Long Term Enjoyment score of one, a Learning Curve score of five, and a Graphics and Animation score of five, for an overall Performance score of 11 out of 15. (*Zany Golf*, $39.95 for Apple IIGS, Atari ST, and IBM 5 1/4" format; $44.95 for IBM 3 1/2" format. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. 415/571-7171.)

The Ancient Art Of War At Sea

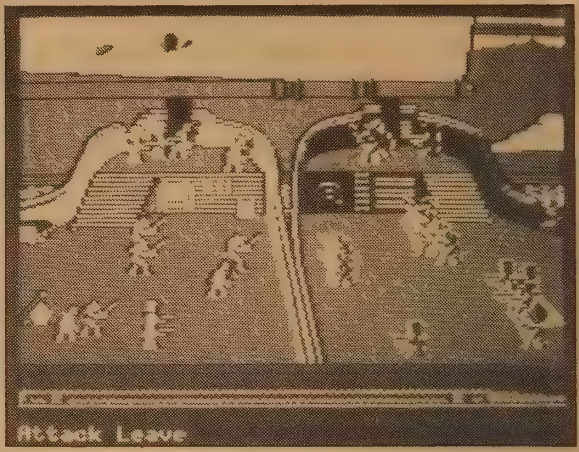
Brøderbund

(Tactical Simulation)

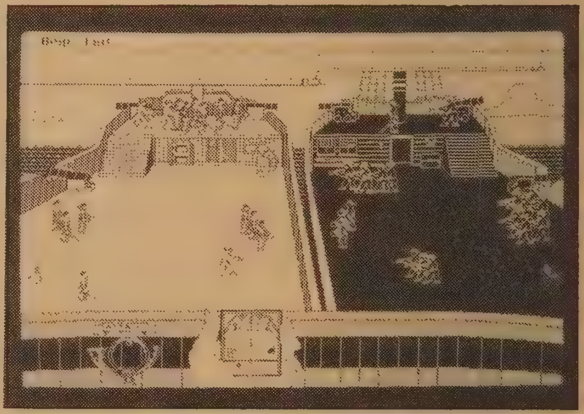
This is the sequel to Brøderbund's original *Ancient Art Of War.* While the concept is excellent, it falls somewhat short of what one might hope for. However, it is certainly challenging enough for most gamesters.

War At Sea is a simulation of 18th Century wooden fighting ships. It allows carronade broadsides, ramming, boarding, and intricate ship maneuvers. Its tactical display is one of the best I've seen, and is highly reminiscent of the UNIX game *Sail.*

When you're playing at the strategic level, *War At Sea* shares the special interface of its predecessor, *Art Of War.* To move a playing piece, you must drag its icon along the path you want it to take. The



The Ancient Art Of War At Sea offers complex, realistic simulations for budding admirals.



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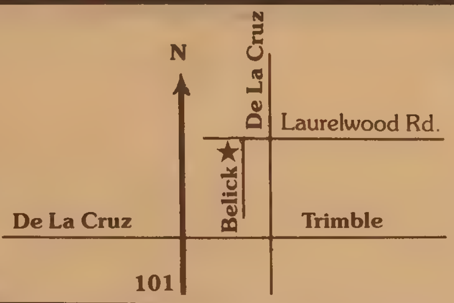

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*w/1 MB DRAM

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8087-2	130
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80387-16/20	345/420
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MODEM 2400 (Int)	95
MS DOS 4.01	75

precision required can be tiresome, and when icons overlap it can be impossible to pick out the one you want.

You maneuver fleets of ships around a pre-defined map. The game comes with several scenarios, each with its own map and distribution of forces. You can win by sinking or capturing all the enemy ships, or by taking all the enemy "crowns," which are special spots on the board.

Because the game lets you play at two levels, the strategic and the tactical, it is like two games in one. Certainly you will need different sets of skills to be good at the two different levels of play.

However, I'm not convinced that *War At Sea* is a good simulation of real warfare. While it is a vast improvement over "realistic" war board games that take days to play and have rule books hundreds of pages long, it may have been oversimplified. The tactical display definitely needs better display options, and there is a general need for more flexible resource handling.

War At Sea rates a two in Long Term Enjoyment (if you are a war games fan, give it a five). The Learning Curve is not bad considering the complexity of the game, and rates a three. And Quality of Simulation rates a four, mostly on the strength of the tactical display. (*Ancient Art Of War At Sea*, $44.95 for Macintosh, IBM, or Apple version, Brøderbund Software, 17 Paul Drive, San Rafael, CA 94903; (415)492-3200.)

Shufflepuck Cafe

Brøderbund

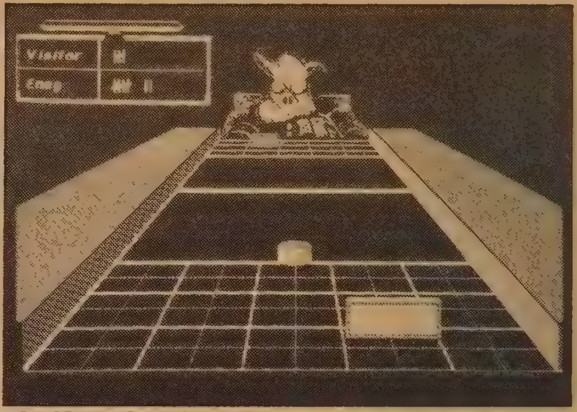
(Arcade)

Far in the future, in an obscure bar frequented by a dozen alien races, there is the last air-hockey table in the galaxy. The bar is the Shufflepuck Cafe; its regulars are crack air-hockey players. And you get to play them.

As the newcomer, you get to choose your opponent from the bar. That part is easy—just click on one of the characters in the place and poof!—you're playing.

Each opponent has his or her own style of play, and reacts to winning or losing in a special way. The big guy on the right, for example, will rip your head off if you beat him. Nobody has ever beaten him, though, so you're probably safe.

The animation of the game is fantastic. The Macintosh screen graphics are, of course, crisp, but the game is so fast and so realistic you can forget it's all just pixels on a screen. There is no lag between moving the mouse and having your paddle move; it is instantaneous. The play is smooth and clean. The sound effects are minimal, but good. This is one of the higher quality arcade games I've seen anywhere on a personal computer.



Shufflepuck Cafe is the ultimate air hockey game on a computer.

Don't forget, though, that this is just a glorified air hockey game. If you aren't a fan of air hockey, well, you might enjoy *Shufflepuck Cafe* anyway, but I wouldn't bet on it.

Shufflepuck Cafe rates a Long Term Enjoyment score of one (higher for you air hockey fiends in the audience). The Learning Curve score is four, and would be higher if air hockey weren't such a game of skill. Face it—real air hockey isn't that easy to be good at. And the Arcade Quality score is five. Even though it is monochrome, and even though the sound effects are understated, the sheer high quality of the simulation is so good, it has to be seen to be believed. (*Shufflepuck Cafe* for Macintosh, $39.95, Brøderbund Software, 17 Paul Drive, San Rafael, CA 94903; 415/492-3200.) ■

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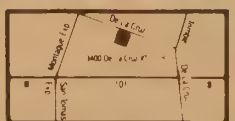

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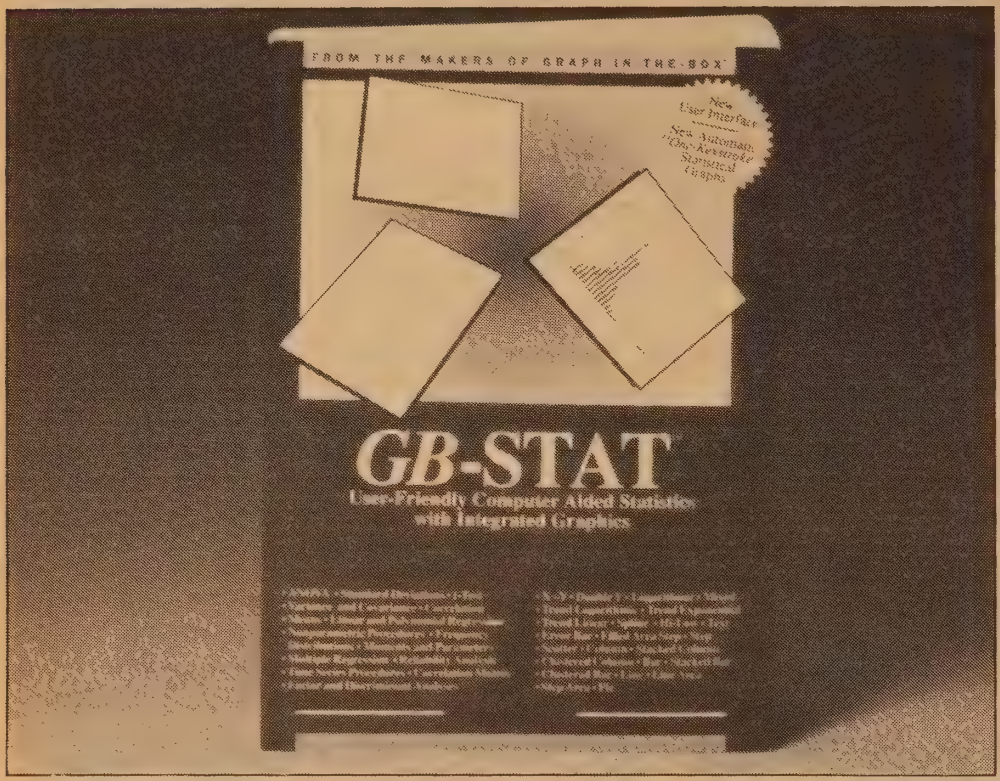
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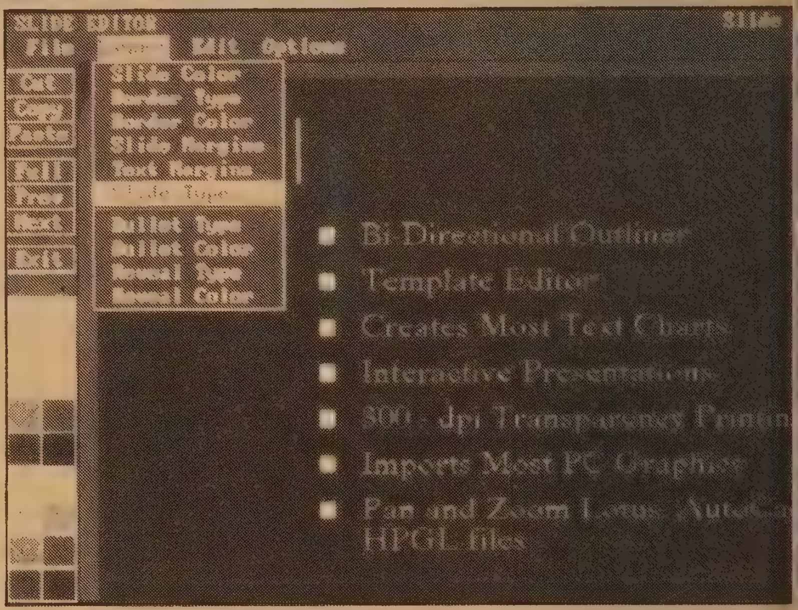
HotShot Presents An Interactive Graphics Package

Symsoft Corporation has introduced *HotShot Presents*, the first PC presentation graphics software optimized for interactive presentation on projection systems, including video and LCD projection panels. In addition, *HotShot Presents* can be used for presentations with laptop computers, overhead projectors, and 35 mm slide projectors. This new application offers Mac-like features, versatility, and ease of use for a PC presentation graphics package. Its features include an integrated bi-directional outliner, template creation, interactive show manipulation, zoom and pan capability, and import and capture features for most kinds of graphics. The simplified Mac-like interface is compartmentalized into six basic functions: edit outline, edit slide, edit template, edit show, run, and print. *HotShot Presents* offers the first-time user the ease of creating simple, professional presentations with a short start-up time, while offering advanced users the capabilities to create more sophisticated presentations. ($349) Symsoft Corporation, 444 First Street, Los Altos, CA 94022. (415)941-1552.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FoneTek, Inc. has developed a system to reduce telephone expenses and guard against unauthorized use of a businesses' telephone lines. Called the AUDITOR, the system works as an add-on board to PC, XT, or AT compatible microcomputers. The AUDITOR keeps track of all calls, including local and incoming, to provide a true measure of how much time is spent on company phone lines. The call data is then stored on disk for analysis and report generation at any time. The information from the AUDITOR can also be used to verify telephone bills and keep an up-to-the-minute summary of telephone usage so that there won't be any surprises when the bill arrives. In order to help businesses better control their phone costs, the AUDITOR can restrict long-distance and toll number calls, 976 numbers, or any other numbers (except 911), and can include on/off times for each number. It can also attach an account number to any call for client billing, order entry, customer service, call allocation, time clock and security applications, or any other purpose. The AUDITOR operates independently of the computer (even if turned off), monitors all rotary and Touch-Tone telephones on the same line, and is expandable from 1 to 32 lines. It can store up to 10,000 call records in its own memory before being copied by the computer onto a disk for later analysis or long-term storage. The AUDITOR consists of an add-on board and a menu-driven software package with built-in help. It is compatible with MDA, CGA, and EGA computer systems with 256 K of memory or more. A rechargeable battery protects call records from being lost during a power outage.($279) FoneTek, Inc., 345 S. McDowell Blvd., Suite 512, Petaluma, CA 94952, (707)778-7182.

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MAC @ WORK

IN THIS ISSUE...

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By Mike Markowitz
By enhancing and expanding *MacDraw*, Claris has created an accessible, flexible drafting package with a multitude of features.

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By David Morgenstern
Reports from recent Mac shows, plus advice for owners of the LaserWriter IISC.

HyperCard 144
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Enduring favorite products.

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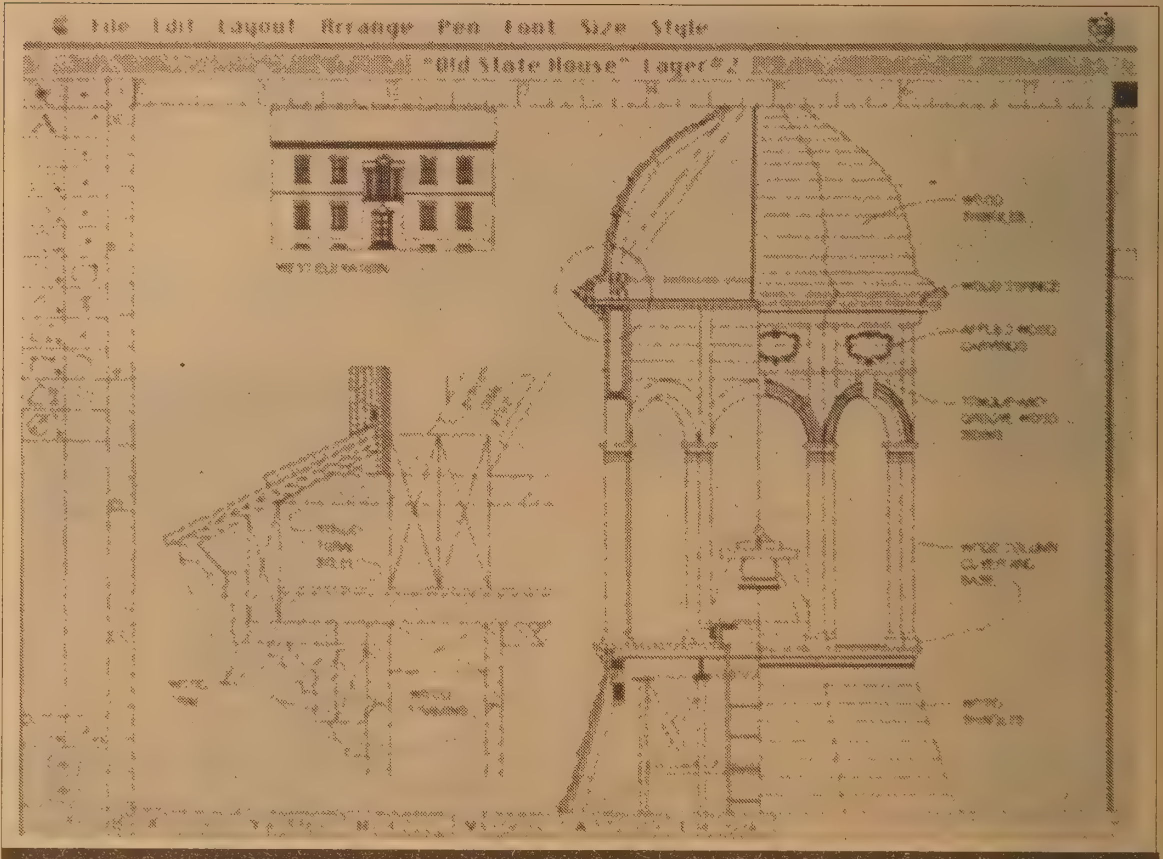
Claris CAD



File Edit Layout Arrange Pen Font Size Style
"Old State House" Layer#2

ABOVE: Claris CAD can be used to create detailed drawings and text explanations of their elements.

A 2-D Drawing Program For The Macintosh

By Mike Markowitz

During the last quarter of 1988, our company evaluated a beta test version of *Claris CAD*, a new drawing program for the Macintosh. The first release version of the program arrived in March 1989. *Claris CAD* is essentially a superset of *MacDraw II*, adding many new features, but retaining total downward compatibility with *MacDraw II* drawings.

Claris CAD is a two-dimensional drafting tool, not a three-dimensional design tool. The distinction is subtle, but very important to understanding the role of the Macintosh in engineering, architecture, and related professions.

A designer needs to think in three dimensions, and this is very intense computationally. No Macintosh product, so far, can compete with the 3-D modeling software available on high-powered workstations. A drafter (or "draftsman"), on the other hand, must often express a three-dimensional design as a series of flat drawings ("blueprints") for production, tooling, assembly, and other phases of manufacture. Drafters work to very exacting rules that specify how a drawing must look.

One limitation of *MacDraw II* that made it unsuitable for professional drafting was the difficulty of creating objects to exact dimensions. It required a sharp eye and precise mouse control to draw a circle exactly 1.637 inches in diameter, centered on a particular point. *Claris CAD* provides a Location Bar, where you can type exact numerical specifications—the program then draws a new object (or modifies an existing one you have selected) to your

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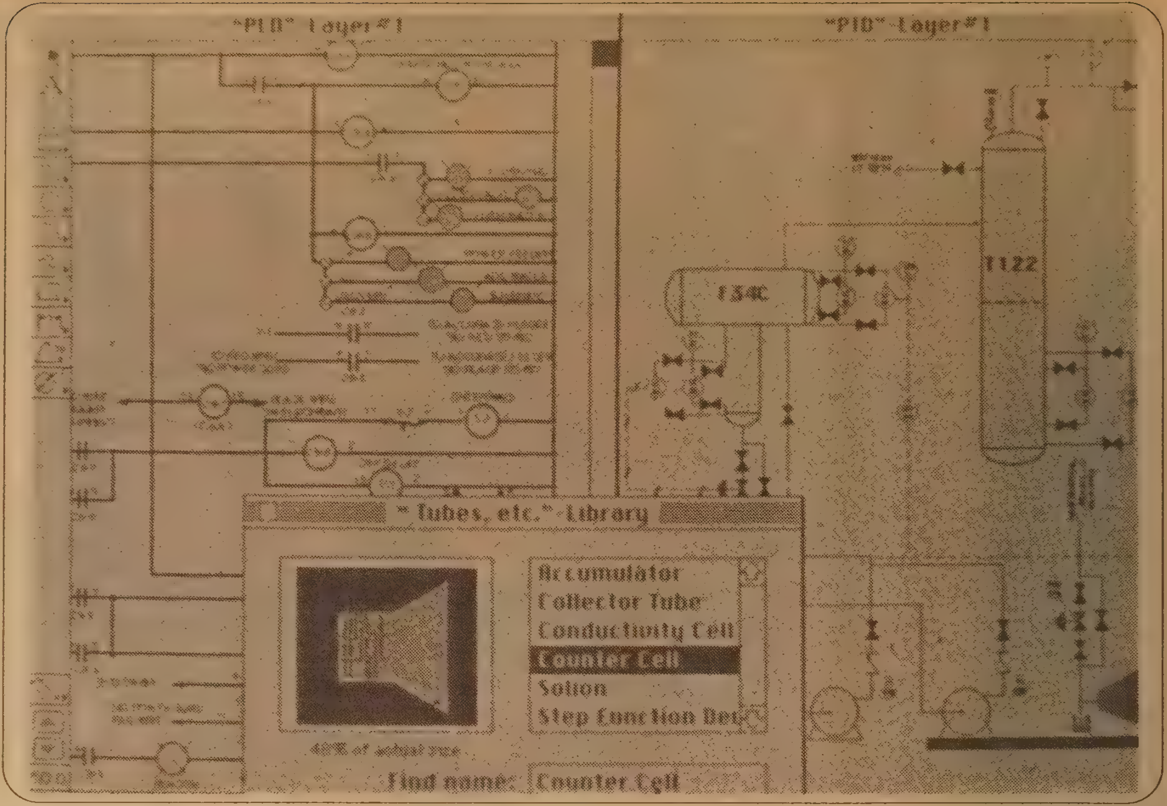
Claris CAD is essentially a superset of MacDraw II, adding many new features, but retaining total downward compatibility with MacDraw II drawings.



The program allows you to store frequently-used shapes and graphic elements in a library for efficient use.

specifications. You can also call up an Info window to display the specifications for any selected object.

Other significant improvements over *MacDraw II* include a new kind of tool palette with "pull-out" options. There are tools for fillets and chamfers, regular polygons, concentric circles, and spline curves. Automatic dimensioning now includes linear, angular, radial, and diametral methods, and a tolerance can be included in the dimension. You can configure the program to use any of five international drafting standards: DIN, ISO, BS-308, ANSI, or JIS.

A new concept is the "tool modifier." This lets you snap a new line to the center of a circle, the corner of a polygon or the midpoint of a line (for example). Other modifiers create lines that are automatically parallel, perpendicular, or tangent. There is also a choice of "tool methods." In *MacDraw II* you could generally draw an object from corner to corner, or from the center outward. Depending on the particular type of object, *Claris CAD* adds several additional methods.

Improved zoom controls let you specify an exact percentage of enlargement or reduction, or zoom in on a selected area of a drawing. The Duplicate command has been extended in ways that save a lot of labor: you can now duplicate groups to create precisely spaced rows, columns, or diagonals, and evenly spaced duplicates along an arc, or the circumference of a circle.

Polygons can now be smashed into their individual component lines. You can create sets of hatch patterns (used to show different materials) on a separate menu, apart from the regular fill pattern palette.

Unlike *MacDraw II*, *Claris CAD* is not limited to

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eight basic colors (if you have a color monitor). You can still create "dithered" color patterns on a 8 X 8 matrix in order to fake blended colors or pastels. Color pen plotter drivers are provided for a variety of Hewlett-Packard and Houston Instruments plotters.

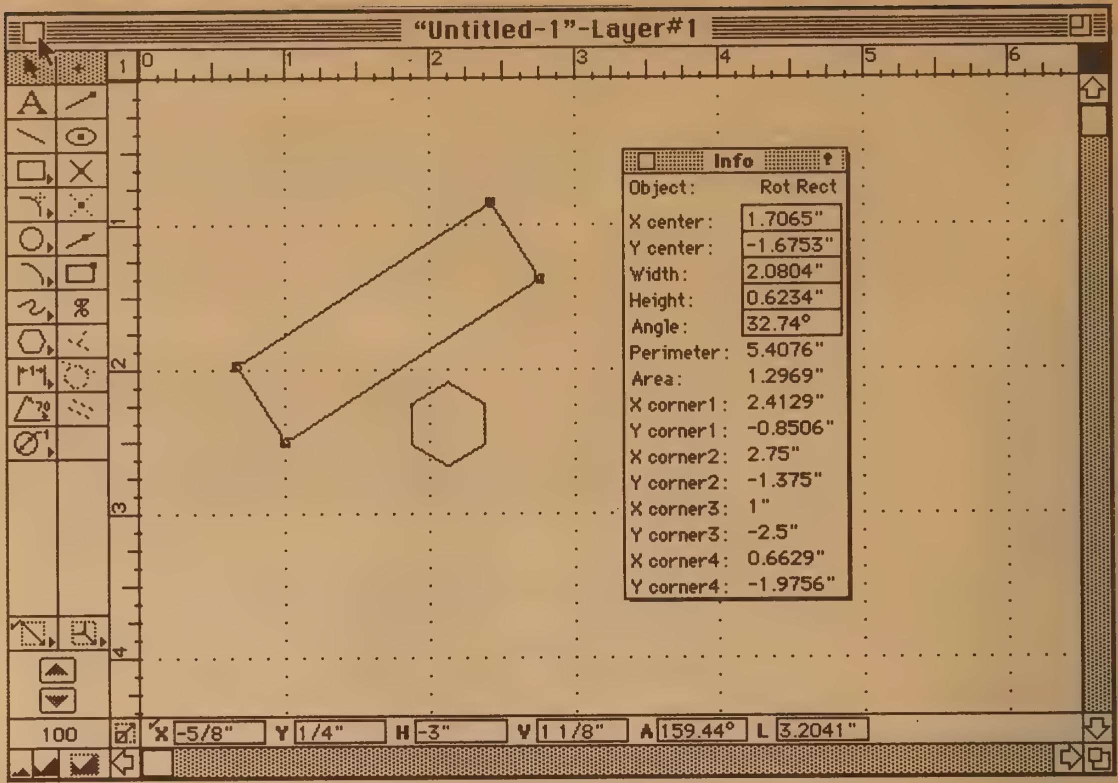
The documentation includes a comprehensive User's Guide, a "Getting Started" booklet, and a Tutorial Workbook. There are three 800 K disks in the package—Program, Utilities, and Tutorial.

Claris has promised to develop "translators" for converting *Claris CAD* documents into IGES, Genigraphics, and DXF formats for exchange with other computers. IGES is recognized by many mainframe and minicomputer CAD systems, while the DXF standard is used by *AutoCAD*. Rumored long-term future enhancements include 3-D solid modeling and surfaces.

To help new users get up and running, *Claris CAD* includes an instructional videotape (VHS format) that runs almost 48 minutes. After some initial marketing fluff, the video gets down to business and provides detailed, practical explanations of how the tools and menus work.

The program itself is very large, exceeding the capacity of one 800 K floppy. It runs on a Mac Plus, SE, or II. It would be quite impractical to use without a hard disk. For serious drafting, a large-screen monitor would be advisable.

With a list price of $799 (expect a street price around $550), *Claris CAD* is a serious investment. Upgrade cost for MacDraw II owners is only $399.



Object:	Rot Rect
X center:	1.7065"
Y center:	-1.6753"
Width:	2.0804"
Height:	0.6234"
Angle:	32.74°
Perimeter:	5.4076"
Area:	1.2969"
X corner1:	2.4129"
Y corner1:	-0.8506"
X corner2:	2.75"
Y corner2:	-1.375"
X corner3:	1"
Y corner3:	-2.5"
X corner4:	0.6629"
Y corner4:	-1.9756"

X -5/8" Y 1/4" H -3" V 1 1/8" A 159.44° L 3.2041"

Claris CAD incorporates MacDraws tools into a sophisticated two-dimensional drafting package.

Any user with experience on a manual drafting board will find the *Claris CAD* environment much easier to use and far more productive than *MacDraw II*. Users experienced with *MacDraw* will be in Hog Heaven. If you have just been using *MacDraw II* for freehand or informal sketching, you don't need *Claris CAD*, but if you have to create precise dimensioned engineering drawings, this is the tool. Claris has obviously done good market research to determine the features that real users need, and the skillful implementation has not created a ponderous, feature-laden monster that slows the computer to a crawl. ■

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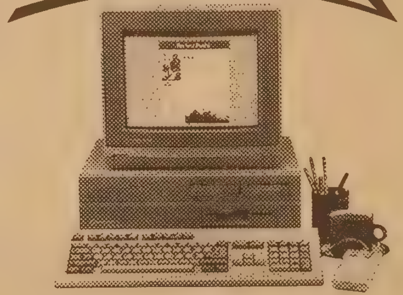

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The HIMS Cache Pro 386/25 & 20 offer unmatched performance in a 386 based computer system. Designed as a powerful personal or business workstation. The HIMS CP-386/25 & 20 provides the highest performance platform for future operating systems, including XENIX/UNIX and OS/2. Advanced features which include HIMS Advanced Cache Memory Architecture ("ACMA") and a fast 1:1 interleave hard disk controller with option of disk caching controller with up to 16 MB of disk caching memory and Motorola 68000 processor which achieves 0.5ms disk access time.

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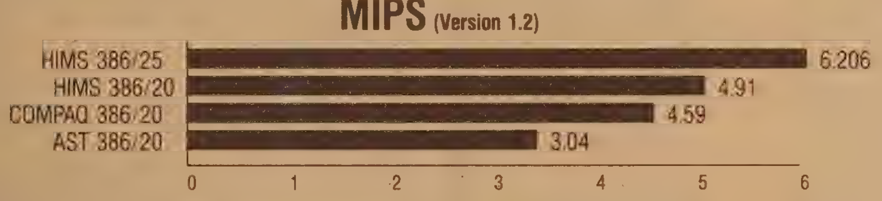
80387 and WEITEK Processor Support

The system has the capability to support both 80387-25/20 math co-processor and the Weitek 1167/3167 floating point co-processor. A combination of 80386, 80387 & 3167 with the implementation of cache RAM. The HIMS 386/25 & 20 provides computational capacity which exceeds most minicomputers and 80386 systems in the industry.



Optional Advanced Disk Caching Controller

HIMS Computer provides an additional outstanding feature to help get the best out of the 386/25-20. The "ADCC" Advanced Disk Caching Controller with such advanced features as automatic disc read-ahead and elevator sorting during cache write-back increase disk performance to levels unobtainable by non-caching controllers. The controllers on board 68000 microprocessor enables it to access the disk drive at the same time as the computer reads or writes to the controller cache. This simultaneous transfer of data between the computer, the cache and the disk enables the system to maintain a very high level of performance, even when heavily loaded. The ADCC supports XENIX, UNIX, DOS, PC-MOS, QNX, PICK, Concurrent DOS, BOS, Prologue Novell Netware, 3 COM and more . . .

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HIMS 286-16 is a versatile and powerful PC-AT workstation and an exceptional alternative for an 80386-16. It provides for exceptional versatility and expandability. Its power delivers bottomline improvements in a single and multi-user multi-tasking applications in individual workstation and shared environments. For even faster processing it comes with socket for 80287 math co-processor. Every component in the HIMS 286-16 is designed to optimize the faster processing speed.

Features	-Cache Pro 386/25 & 20 MHz	Page Mode 386/20 & 16 MHz	SX 386/16	286 Plus 8/16	286 Plus 8/12
CPU	80386/25 or 20 MHz	80386/20 or 16 MHz	80386/16	80286/16	80286/12
Coprocessor	387/Weitek	387/Weitek	80387SX	80287	80287
Cache	64K/256K	None	None	None	None
RAM/Board	1 to 8MB	1 to 4MB	1 to 4MB	1 to 4MB	1 to 4MB
Expandable	16MB	16MB	16MB	8MB	8MB
Floppy Drive	1.2 or 1.44	1.2 or 1.44	1.2 or 1.44	1.2 or 1.44	1.2 or 1.44
Dual FD/HD Controller	1:1 MFM	1:1 MFM	1:1 MFM	2:1 MFM	2:1 MFM
I/O Ports	2s, 1p	2s, 1p	2s, 1p	2s, 1p	2s, 1p
Special Slot	1 = 32 bit	2 = 32 bit	1 = Fast Slot	1 = Fast Slot	1 = Fast Slot
Keyboard	101 Enhanced	101 Enhanced	101 Enhanced	101 Enhanced	101 Enhanced
Bios	AMI	AMI	AMI	AMI	AMI
Landmark	42/33	28/22	21	20.8	16
Norton SI	32/24.7	23/18.7	18.7	18.7	15.3
The above systems are available in 5 Models: Model 50M, 70M, 110R, 150ES, 300ES					

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HIMS 286-16:

HIMS 286-16 computer system delivers the power, versatility and expandability of a 386 PC 16 MHz at a fraction of the cost of an AT™. HIMS 286-16 offers greater throughput than many 386-based machines including Compaq Deskpro 386-16 and IBM PS/2 Model 60.

Expandibility:

HIMS 286-16 comes with 1 Fast Memory Slot running at 16MHz (also used as 8 bit slot), 4 16-bit AT slots and 1 8-bit slot. While the system operates at true 16 MHz 0 wait state the bus speed stays compatible to 8 MHz to stay 100% hardware compatible to the old IBM™ conventional bus for the ultimate in compatibility.

HIMS 286-20 MHz, 12 MHz, and 10 MHz.

HIMS 286 also comes in 20 MHz, 12 and 10 MHz performance. It comes with identical features to the HIMS 286-16 for users who need the power processing at affordable prices.

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MAC @ WORK

BMUG

BY DAVID MORGENSTERN

BMUG On The Show Circuit

BMUG spans the globe this month with reports from Mac fairs around the world. The news is a disk shaking, byte bending adventure. Intrigue and gore are working their way off the pages onto your fingers—or is that your lunch?

No Mac Is An Island

April was Mac month this year, and most publishers and marketing representatives thought there was too much (or too little) of a good thing. There were Macintosh shows in Chicago (MacDex), New York (Macintosh Business Conference), Amsterdam (MacWorld Europe), Washington (Macworld Expo), and New Jersey (Macintosh as a Research Tool Conference). The Mac was also represented at industry shows in Hannover, Germany (CeBIT), Philadelphia (National Computer Graphics Association), and San Francisco (Seybold Seminar). Holy frequent-flyer mileage, MacMan!

The two super-hyped shows, MacDex and Washington Expo, were not monster hits. The Chicago show, called by the attendees *the Apple ghetto,* was a disaster—only the faithful came. The Expo did much better, but only half the convention center was used.

Some of the big player companies didn't even bother with booths at the DC show. They took residence in hospitality suites across the street in the Hyatt Hotel. This must have been a MacFantasy Island—the hotel has three floors below ground, with lagoons, waterfalls, colored lights, and floating live piano. Here are some highlights (it's slim pickings):

- The hit of the Expo was the BMUG T-Shirt, tie-dye edition. It was one of the few offerings at DC that wasn't trying to out-corporate, out-bureaucratize its neighbor. A second edition is in the works if you missed your chance in April.
- Apple announced an external version of its 1.4 Mb SuperDrive for Mac IIcx and SE/30 flavored Macs. The big news is that Apple is going to "co-market" the *DOS Mounter* INIT, created by Dayna Communications. This software lets your Mac use DOS floppies without having to use the brain-dead *Apple File Exchange* program.
- Hardware hounds were drooling over the Telfax Model RA210 by the Relisys Company. It is a stand-alone fax machine that also plugs into your Macintosh. Incoming faxes can be sent to your Mac, the Telfax, or both. It also can be used as a 200-dpi scanner or printer! If only it shredded documents too.
- The best panel award goes to *Computers and Ethics* —it's no joke! It was moderated by Peter Black, President of Xiphias, a CD-ROM publisher, and the speakers included an *ABC News* executive producer, a networking expert, and a computer literate rabbi. Perhaps we'll see this repeated at every Expo (hint-hint).
- The best party was sponsored by the Pentagon and NASA User Groups, held in the Smithsonian Air and Space Museum. Many parties ran out of food in the first quarter of an hour. The BMUG road crew's food budget was ruined by this party parsimony.
- The Jasmine Technologies press conference was a disaster. It was held across from an undertakers' convention and the microphone was giving up the ghost. Dennis Chang, Jasmine's boss, talked the whole time about the company's reorganization and legal difficulties—not its new digital audio tape (DAT) drives for the Mac. The $7,000 drive will store 1.2 gigabytes (a lot) on one cassette. You can back up a 20 Mb hard disk in just a few minutes. Maybe it was the embalmy weather.
- John Sculley gave another rendition of his 1989 Show Speech and HyperTV Dog and Pony Demo. Practice makes perfect. He said, "We can play in a standards world, but we do it in a way that is very Apple." Huh? Is this a boast or a confession?
- A funny thing happened at the Hannover Mac Faire. The Apple booth had a display of Macintosh logic boards. A hard-headed person was looking at the candy in the window and saw something new. It had the look and feel of a Macintosh laptop board. It had definitely been manufactured in Apple's Ireland factory. It disappeared quickly into the back of the booth.

If you're planning next year's calendar, here's some news. The next San Francisco Macworld Expo will not be in January. It will move to April, and don't ask if/when the DC Expo will be. The vendors apparently didn't like competing with the Super Bowl.

The date of the 1990 Boston Expo is also floating away from the summer. Everyone was tired of working in a sauna and of testing the high temperature operating conditions of their products. I'm sure the group that runs the Expos will pick some other convenient week—Jewish New Year or the World Series.

One Good Word

Most BMUG meetings have questions about printers, viruses, and word processors. *Word 4.0* and its place in heaven (or the other place) have been debated since beta testers started dropping hints a year ago. It's almost a Civil War psycho-drama, with the family split into the *Word, MacWrite II, WriteNow,* and *Everyone Else* Camps.

Among *Word 4.0*'s best features are the **Commands** under the **Edit** menu. You can select the functions and features you want from a list of 255. All the command-key equivalents and menu items can be modified to fit your working style and needs.

One of the 255 commands is *Screen Test.* It is a screen saver, like the shareware *Moire,* but the background color is selectable (if you have a color machine). Probably the reason *Word 4.0's* release was delayed for six months.

Word 3.0 and *4.0* allow you to insert special

Man Bytes Dog

The weekly BMUG meeting is filled with great plays, in spite of the treacherous blowing windbags. Developers hope for a home run, while the peanut gallery hopes for some good BASICs. We always make sure the Mac is grounded out and off the disabled list.

Upcoming Events

June 15: Chris Crawford (famous game author) and Monogram *Business Sense.*

June 22: Electronic Arts *Studio One,* MedLine *Knowledge Finder,* Andros Software *SewSoft* (CAD for clothes).

June 29: Agfa Compugraphics (DTP), 3Com (network stuff).
July 6: Jean-Louis Gassee, Apple Products President.
July 13: To Be Announced.
July 20: Dantz Development *Retrospect* (backup stuff).
July 27: Mediagenic *Manhole II.*

Call the BMUG HelpLine about attending our new monthly BMUG West meetings in San Francisco!

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PostScript commands into your document when printing on a LaserWriter printer. Here's a way to make sure draft copies aren't mistaken for the finished product.

Open your header and type in the following text exactly:

```
.page.
/Times-Bold findfont 100 scalefont setfont
wp$x 2.8 div wp$y 3.5 div translate
0 setlinewidth
52.3 rotate 0 0 moveto (D R A F T) true charpath
gsave .95 setgray fill grestore stroke
```

Now select the text and press **Control-Shift S** to get into the style definition mode. Type the word POSTSCRIPT and press **Return**. Finally Close and save the header. Now the word DRAFT will appear in large outlined letters across every page.

The next San Francisco Macworld Expo will not be in January. It will move to April, and don't ask if/when the DC Expo will be. The vendors apparently didn't like competing with the Super Bowl.

The Poor Relation

Last year, Apple came out with a new family of LaserWriters—the LaserWriter IIs. The three cousins are the LaserWriter II NT, NTX, and SC.

At the bottom of the LW II clan is the LaserWriter II SC. It was hailed as a "new direction" for Apple's laser printing marketing strategy. Some new direction—buy this one if you don't have much money.

Although the LW II SC looks just like the higher-priced spread, it's much different. Apple hopes you'll come into some dough and will take advantage of the many upgrades available for the series.

The LaserWriter II SC is not a PostScript printer. It can't perform all the wonderful graphic tricks that we're used to from our PostScript-wise graphic and layout software. But you can buy the upgrade...$.

It also can not be shared by more than one Macintosh on a network. The SC comes from the SCSI (Small Computer Systems Interface) port that connects the Mac and the printer. But you can buy the upgrade...$.

If you're a LaserWriter II SC owner, or thinking of purchasing one, here are some tips:

- **Buy the correct cable.** The LaserWriter II SC seems to give computer sales staff myopia. They think the only hardware combination possible with the SC is a Mac SE with an internal hard disk. Most sales persons will give you the standard cable (M0206) out of habit—not even asking if you have an external hard disk.

If you have an external SCSI hard disk you will need a different cable—most likely the Apple SCSI Peripheral Interface Cable, MO207. Some SCSI devices have different connectors than others. Most Mac drives use a 25-pin connector, while others use a 50-pin plug. To make sure you get the correct cable combination for your drive and printer, bring the drive and its cable to the store and try it out.

- **Think Four.** The LaserWriter SC doesn't use outline or PostScript fonts (OK, System 7.0 will offer Apple Outline fonts—it's a year away and we have to buy today). It looks at larger sizes of bitmap fonts (the ones you install in your system file) and squeezes them down to size. The LW SC needs installed fonts **four times larger** to print in an acceptable quality. Make sure any special fonts you need come in 48, 56, and larger points.
- **It's not broken.** When you turn on a PostScript LaserWriter, it spits out a fancy test page. With the LW SC you can wait all day for the test, but it won't come. It's not broken, just tightfisted. To get the test, the LaserWriter SC must have its *SCSI ID* set to 7. Each SCSI device must have a different ID number. The Mac's is always 7, so if you must check the test page, turn your Mac off. Be sure to reset the LW SC number when you're done fooling around.
- **It's not broken II.** When you select a PostScript LaserWriter in the Chooser (by clicking its icon in the left hand box), a printer name usually appears in the right hand box. Don't expect the LaserWriter II SC to give you its name. It's not broken, just shy.
- **The maximum length of a SCSI chain is 18.7 feet.** SCSI devices can be connected together in a *chain*. The combined length of all the cables can not exceed 18.7 feet.

Shareware Spotlight

Macintosh software programs have *flags* that tell the Finder their identity. This lets us view programs and files by type.

Application programs have additional information that allows them to have their own icon and assign icons to documents and related files. This code is stored in the *BNDL resource*. Software with this resource are marked by having their *Bundle bits* equal to 1, or *set*.

Unfortunately, there have been programs that incorrectly set the bundle bits of documents they create. The most pesky recent example was the first release of *FullWrite Professional*, in which the bundle bit on the Thesaurus was set.

The outcome of a set-bit document is serious. When you double-click on a document, your Mac opens (or tries to open) the application that created that document. The *FullWrite* documents tried to open the "application" Thesaurus, thinking the Thesaurus was its creating application. Users discovered a big difference in performance between the real program and the pantomime program. KaBoom!

BundAid, written by Jim Hamilton, scans a disk and makes sure that each file whose bundle bit is set, actually has a BNDL resource. If it does not, the bundle bit will correctly be cleared to 0.

BundAid and a lot of other goodies are on BMUG *Utilities 11* disk. ■

What is BMUG?

BMUG is a non-profit educational corporation, promoting the exchange of information. Like any growing organization, it is many different things to its 6,500+ international membership. BMUG, Inc. is a computer user group located in Berkeley, California. The group specializes in computers using a graphical interface. For a while that meant the Apple Macintosh but now includes other makes, models, and operating systems, including the NeXT best thing. BMUG supports many Special Interest Groups (SIGs), a eight-line Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6:00 to 9:00 (or whenever we finish), in the Physical Sciences Lecture Hall on the U. C. campus.

The BMUG HelpLine, (415)849-HELP, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (10:00 a.m.—5:30 p.m.). If your question can't be answered on the spot, we try get you in touch with someone who can help. Of course, not every problem can have a happy ending — but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with 350+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM*™, our entire library and more on CD-ROM—according to Apple it's the best selling CD-ROM!

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere! BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com) or (user.name@BMUG.FIDONET.ORG). With our multi-line capability you are now able to have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

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WD-1007 ESDI 1:1 interleave	235
DTC 7280 MFM 1:1 interleave	139
DTC 7287 RLL 1:1 Interleave	169
Adaptec 2372B RLL 1:1 Interleave	189
Adaptec 2322 ESDI 1:1 interleave	239
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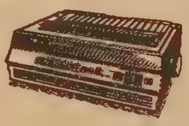

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HYPERCARD

BY BIRRELL WALSH

ENDURING AFFECTION

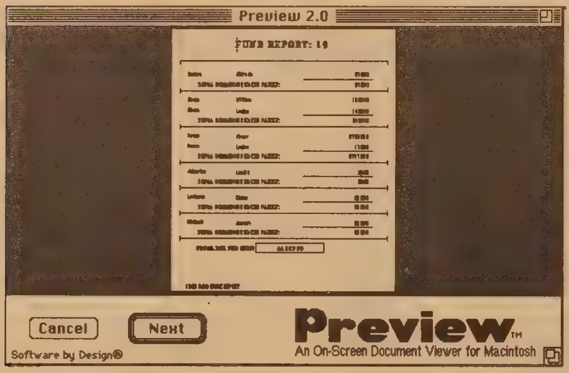
or *MacRecorder, Reports,* and *Virex*

Most users spend a great deal of time with a few pieces of software. They explore the software in great depth, trying to wrestle satisfaction from it in many different contexts. They have a marriage, happy or unhappy, with the programs.

Reviewers are a more promiscuous lot. We sort through many kinds of programs, jumping from application to application. It is part of the job: we are samplers. But we also use some software for a long time because we come to like it. It may be that the product is particularly useful. Sometimes it is well-crafted, sometimes fun. The best are all of these. Here are three products I go on using when the review is done: they get my Enduring Affection awards.

A Report By Morning

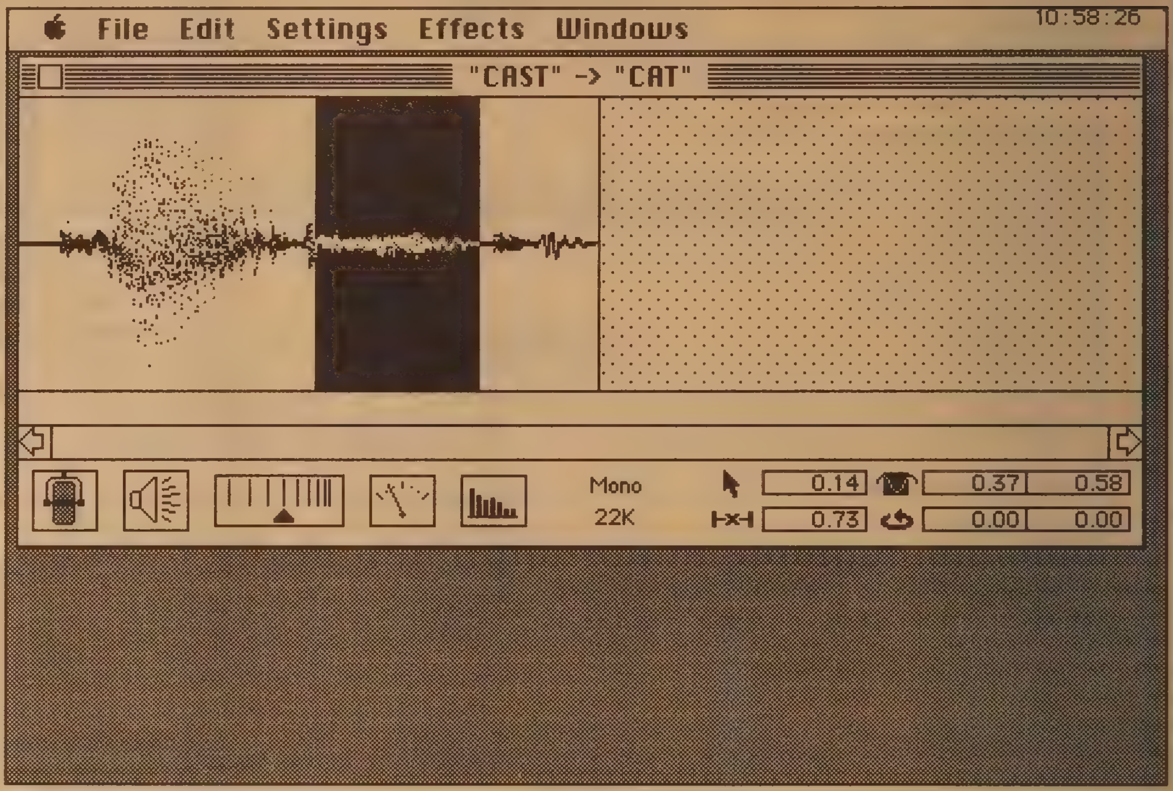
TenPointO, once known as Activision, has a number of good products for *HyperCard.* Several are for business, one or two are purely for pleasure. The one I keep using is **Reports**, now in Version 1.2.2. TenPointO sends out free upgrades to registered user's every time there is an update of *HyperCard.* Extraordinary!



Reports-Preview: You can preview each page of the report, or zoom in on part of the page with the magnifying-glass tool.

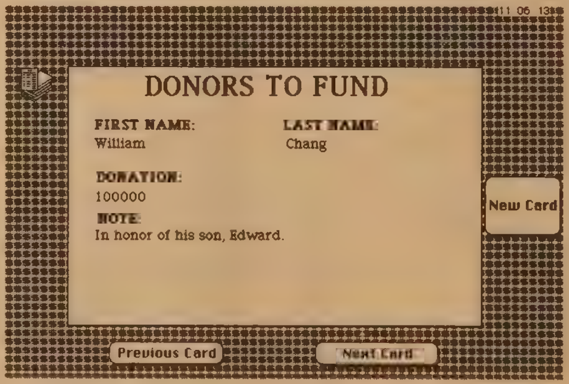
Reports fills the gap left by *HyperCard*'s unsatisfactory report facility. It allows you to make very satisfactory, well-designed reports from the data in your *HyperCard* stacks. You can build reports, invoices, mailing labels, form letters, disk-labels, catalogues, or rolodex cards. It does require that you think about layout and do some programming. There are plenty of examples to serve as models, but it will work best in the hands of a person comfortable with HyperTalk.

Copyright © 1989 by Birrell Walsh. All rights reserved. Birrell Walsh can be reached on the WELL (User ID: birrell) and CompuServe (72466,3567). The raccoon is by Dakin.



Sound Edit: The word "Cast" with the consonant "s" selected on the Sound Edit screen.

When you begin to design a report, you work on a screen like that for most database report generators. You design the head and foot of the report, and then design those elements that repeat. You can include any or all of the fields from the stack in the header and footer, as well as in repeating sections of the report. *Reports* includes "Preview," a printer option selected through the Chooser.



DONORS TO FUND

FIRST NAME: William

LAST NAME: Chang

DONATION: 100000

NOTE: In honor of his son, Edward.

Reports-Stack: A card from a database in HyperCard.

You can do summaries and subtotals at various levels, and group the data by fields to several depths. You could organize a database by surname, and then group those persons of a given surname who also share an address. You can write scripts that sort the stack's cards on any or several fields. It lets you print to the screen to check your report layout before actually using your printer.

There are two elements of *Reports* that should be better publicized. First, you can reach into more than one stack with the script to get information. *Reports* makes *HyperCard* into a relational database. It will not work as fast as *Helix,* but it will work. Secondly, you can select graphics from stacks and include them in the report. You can include clip art, scanned photos of employees, and pictures of parts in your inventory. The only limit is that the picture will be at bit-map resolution. You can use the product to make simple catalogues.

If you use *HyperCard* as a database, you need *Reports.*

Reports V. 1.2.2
TenPointO
3885 Bohannon Drive
Menlo Park CA
(415) 329-0800

Say What?

The trickiest part of building a stack is finding or creating sounds. You can draw the graphics, but how can you get the perfect audio? What we need is a microphone, a digitizer, a sound editor, and even a resource manager to handle the formats in which

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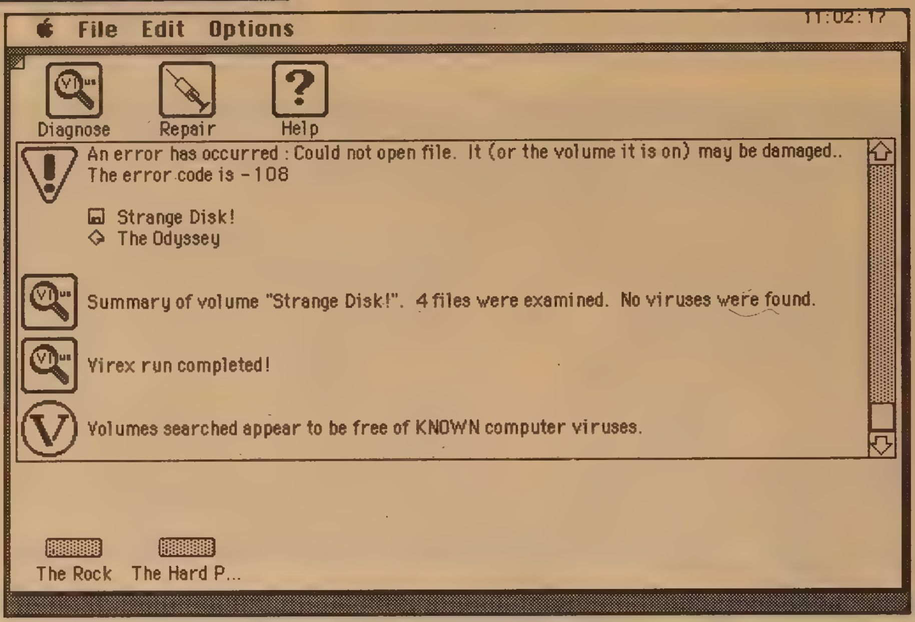

```
An error has occurred : Could not open file.  It (or the volume it is on) may be damaged..
The error code is -108

Strange Disk!
The Odyssey

Summary of volume "Strange Disk!".  4 files were examined.  No viruses were found.

Virex run completed!

Volumes searched appear to be free of KNOWN computer viruses.
```

Virex: Virex has just finished examining a disk that came in the mail.

the Mac stores sound.

We now have what we need because Farallon Computing has issued a remarkable device at a remarkable price. It is called **MacRecorder**. It comes in a box the size of a reference book. Inside you find all the parts you need to work with sound in *HyperCard* and other Mac programs.

There is a digitizer with a built-in microphone. It has a volume control on the side, and inputs for another microphone and for feeds from a CD, tape, or other line-level outputs. There is a *HyperCard* interface that records sounds directly into *HyperCard* format, and allows you to make sounds for stacks with little fuss.

My favorite part is **Sound Edit**. This is a separate program that permits very subtle editing and shaping of sound. I just took a break from writing to edit some sentences. I was able to remove the "s" from the middle of the word "cast" to make it into "cat." In fact, you can edit with a precision of up to 1/11,000th of a second. If you have ever done razor-blade tape editing, this is a program to kill for.

You can also flange sound, filter it, change the volume and frequency envelopes, and generate sine-, square-, and triangle-wave sound. You can mix up to four channels and (if you have a Mac II) work in stereo. Frequency sampling will give you up 11 K. There is some hiss: I would rate the product OK for professional use on an AM station but not on FM.

Farallon is about to release Version 2 of the software. If you can find a Version 1 around, buy it. For anyone who has bought the product after January 1, the upgrade will only be the cost of handling—ten dollars or less. For earlier purchasers it will be $40. New features include new compression schemes, new displays, and new effects. For the price, the combination of hard- and software in MacRecorder is unbeatable.

MacRecorder

$199.95 for Version 1
$249.95 for Version 2
Farallon Computing
2201 Dwight Way
Berkeley CA 94704

HyperCard Hygiene

When you use *HyperCard* a lot, you exchange stacks a lot. That puts you at risk for viruses. What can you do about it? I use **Virex**. I use it on every disk I get before I do anything else with that disk. The people at *Virex* send you bulletins about the latest Macintosh viruses. You can get updates for a reasonable price. The product detects viruses, and removes them in a separate step.

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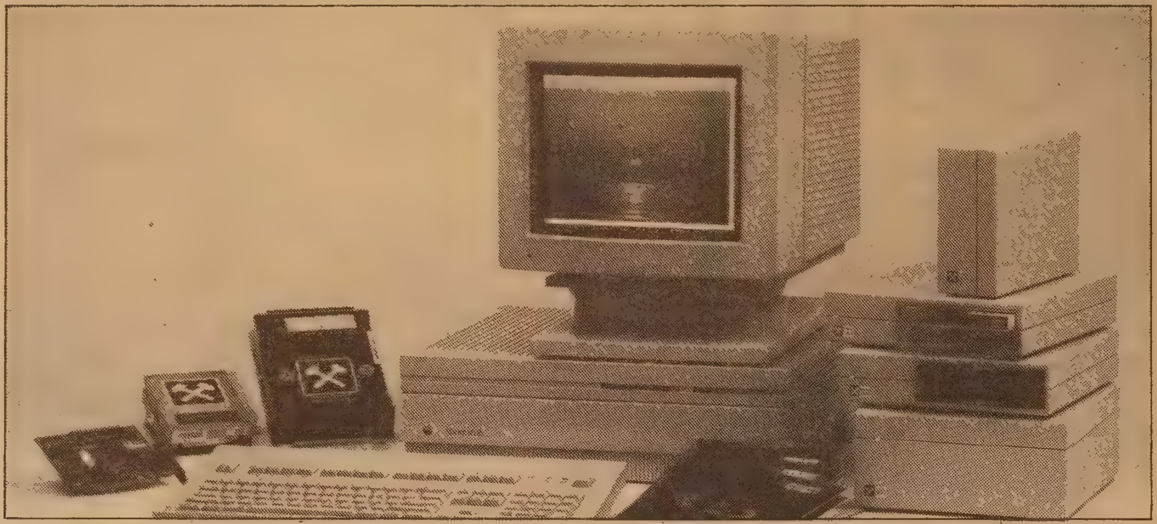
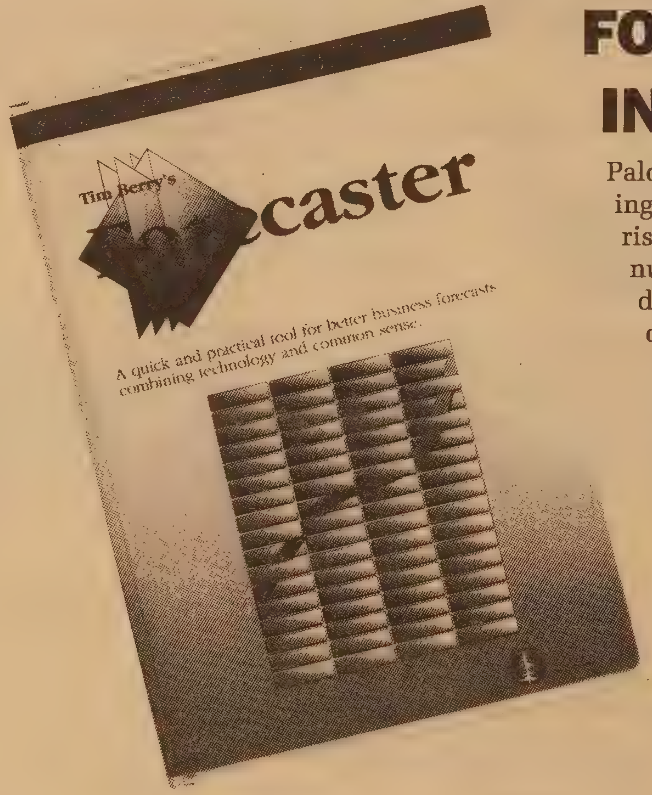


The HammerDisk600 uses the new magneto optical technology to provide 600 Mb of storage in a convenient, removable cartridge. The new optical drive is oriented toward network users as an on-line backup medium, and sophisticated Macintosh users who demand the latest in technology. The HammerDisk600 features a 61 ms average access time and transfer rates up to 1.2 Mb per second. A 256 K data buffer is included in the drive to increase throughput. The drive also includes proprietary system software that enables the unit to function as if it were a floppy disk ; allowing for full Finder ejectability. The HammerDisk has a service life of up to 20,00 hours MTBF. All HammerDisk drives come with a software package that includes FWB's own utility programs such as *Hard Disk DeadBolt*, *Hard Disk Partition*, and *Hard Disk Util.* ($4995) FWB, Inc., 2040 Polk St., Suite 215, San Francisco, CA 94109. (415)474-8055.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FORECASTER ALLOWS INTUITIVE GRAPHIC INPUT

Palo Alto Software has started shipping *Forecaster*, a business forecasting software product that lets people draw their business forecasts as rising or falling lines on a graph. *Forecaster* then converts the lines to numbers. With *Forecaster* users set their high and low limits and then draw a line or curve on a graph. *Forecaster* instantly interprets the drawing as specific numbers than can be copied into a spreadsheet using the clipboard or a text file. *Forecaster* also rounds numbers automatically and instantly displays the compound growth rate from the first period in the forecast to the last period. It can work with up to 24 forecast periods at a time, and with numbers up to 9 million. *Forecaster* is a spreadsheet add-on that works with *Excel*, *Full Impact*, *MacCalc*, *Trapeze*, and *Wingz.* ($69.95) Palo Alto Software, 260 Sheridan Ave., Suite 219, Palo Alto, CA 94306. (415)325-3190.

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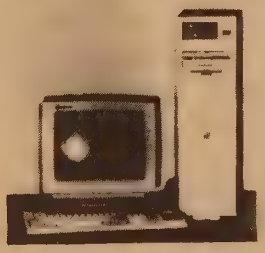

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Continued from page 96

K 5 1/4" disk drive available for a rather pricey $499. But they also have a clever Floppy Link card ($199) that is installed in the desktop machine and then connected to their portable. The result is that the T1000 thinks one of the floppy drives in the desktop is actually its second drive. If you work in conjunction with a desktop and need a 5 1/4" floppy drive, this may be the way to go.

There are actually a number of excellent products designed for transferring files between laptop and desktop units. The newest one to strike my fancy is *Fastwire II* ($99.95). It is super fast, especially when transfers are made through the parallel port. The product comes with either a serial or parallel cable—you have your choice—to connect the two computers. And you do not have to tell the program which ports are being connected—it automatically senses.

Another feature allows you to create batch files that will copy massive amounts of information between two computers. For instance, you can have it copy an entire hard disk complete with subdirectories. But what makes this really useful is the ability to exclude selected files or subdirectories from the transfer. This means I can copy my entire hard disk, but leave out the DOS subdirectory, config.sys, and autoexec.bat files, which will generally be different on each system I use.

The keyboard on the T1000 is compact, with 82 keys. An optional numeric keypad ($99) is available for users who find the embedded keypad too cumbersome. While not as nice to use as a larger keyboard, the included keys get the job done. The Toshiba keyboard does not have the kind of feel I like, but when it comes to keyboards, touch is really a matter of taste. To its credit, Toshiba has accommodated every function you need in the design. Even Function keys 11 and 12 are available through the use of the "Fn" key—a key that allows standard keys to serve a second function.

Included along with DOS on the ROM chip are several other programs that are necessary for using the T1000. Setup10 allows you to see how the system is configured and to make changes to suit your needs and options. The documentation walks you through every step to help you get the machine set up the way you want.

A number of other accessories will enable you to set up the Toshiba T1000 to do whatever you need. For some time there has been a 1200 baud internal modem ($299). They are now coming out with a 2400 baud model ($399). All of the accessories are user-installable. An automobile adapter ($59) allows you to operate the unit for extended periods from the cigarette lighter of a car. This unit will also recharge the internal battery, so it is convenient for someone who travels a lot by car and needs portability. The carrying case ($59) rounds out the list of options.

Toshiba has had this unit in its product line for several years; because it has consistently been a good seller, Toshiba continues to support it actively. New products like the 2400 baud modem show their continuing interest in this product. Likewise, they have made DOS 3.3 available for those who are running software products that require this more up-to-date operating system. If you choose this option, you will have to install it in either the hard RAM disk—if you have the extra memory card—or use it from a floppy.

The documentation that comes with the T1000 is designed to be simple enough so that the novice can use the machine, but contain enough information so that the more sophisticated user will not feel frustrated. But if you do run into problems, Toshiba has an 800 number that will connect you with courteous qualified technicians who will be able to help you. For the more sophisticated user they also operate an electronic bulletin board accessible through your computer if you have a modem. While this is not a toll free connection, the board contains helpful suggestions and even software that can be downloaded. This is a valuable resource for those who can access it.

If you need the fastest and most advanced portable on the block, this is not the machine for you. But if you want a reliable lightweight unit that will allow you to do work away from your primary machine, this may well be just what you are looking for. Its light weight and wonderful design make it a real contender. ■

Resources:

Toshiba T1000 $995.00 list price
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IBM PS/2 Model 80, 16MHz	2.87	20.0	17.6
Everex Step 286/12	**2.45**	**15.9**	**13.7**
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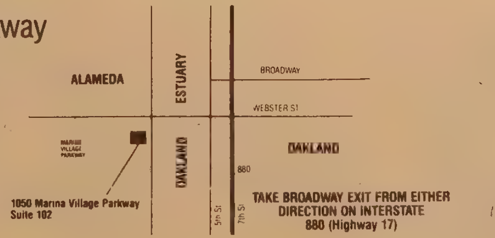
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UNIX

BY BENNETT FALK

big N, little e, big W, big S

A PostScript-Based Approach To UNIX Windows

Don't get confused. When it's spelled in this funny way, NeWS has nothing to do with current events, the people who hang around with Huey Lewis, the "netnews" on USENET, or even the other big N, little e word NeXT.

No, NeWS is an acronym, and what it stands for is Network extensible Windowing System. That, in turn, is a creation of Sun Microsystems. NeWS is a software product and it does roughly the same kind of thing that MIT's X Windows does: it gives people using workstations a graphical user interface from which to run programs.

For both X Windows and NeWS, client/server communications are mediated through a network, which gives both systems remarkable flexibility: a single server may interact with client programs on various machines throughout the network.

Like X Windows, NeWS uses client/server architecture. The NeWS server is a program to drive the display on a workstation. It paints the workstation's screen and monitors the workstation's input devices, usually a keyboard and mouse. User input is passed on to the appropriate client program.

NeWS clients, like their X Windows counterparts, are application programs with no direct interface to the user (who is ostensibly running things). For both X Windows and NeWS, client/server communications are mediated through a network, typically one that is Ethernet-based, and this gives both systems remarkable flexibility: a single server may interact with client programs on various machines throughout the network.

NeWS also resembles X Windows in being a windowing system without a characteristic look or feel. Both systems provide an architecture for applications and a set of tools without dictating the appearance of the programs that use these facilities.

Unlike X Windows, NeWS manages the workstation display using PostScript, a language originally developed by Adobe Systems to control printers. To make PostScript work for a windowed display system, Sun Microsystems extended the language to manage devices that can talk back. (Interestingly, Sun's extended version of PostScript pre-dates Adobe's own Display PostScript.)

Because it is PostScript-based, NeWS enjoys several advantages over X Windows. Not the least of these advantages is that PostScript, through its "dictionary" feature, can become an object-oriented language, similar in many respects to Smalltalk. This not only simplifies the design and coding of interface tools, it has benefits at run time as well.

Once display objects, like windows or menu bars, have been defined, the details of putting these objects on the screen can be left to the NeWS server. The client program is freed from having to know the display characteristics of the workstation on which it is projecting a user interface. The client can manipulate the display with relatively few instructions, leaving low-level operations to the server. Consequently, NeWS client programs should be able to exploit advances in graphics hardware and display technology with relative ease.

Being PostScript-driven, the NeWS server has a cleaner bootstrap procedure than does X Windows. When a NeWS server is started, it looks for initialization files that contain the PostScript source code

NeWS is eminently portable to other computers because it is not kernel-based, it uses PostScript, and it can be easily adapted to different graphics hardware. The system has already been ported to workstations from various manufacturers.

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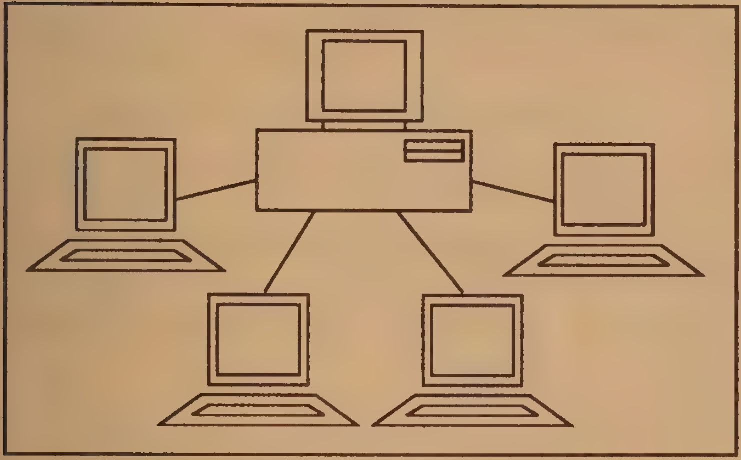

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from which the server sets up the NeWS display before any client programs have been started. One of Sun's extensions to PostScript allows the server to create UNIX processes, and thus start client programs.

NeWS On The Mac

While NeWS is certainly a Sun product, it shouldn't be dismissed as just another computer manufacturer's proprietary windowing stuff. Indeed, the system is eminently portable to other computers simply because it is not kernel-based, it uses PostScript, and it can be easily adapted to different graphics hardware. The system has already been ported to workstations from various manufacturers, including Silicon Graphics. Recently the Grasshopper Group (212 Clayton Street, San Francisco, CA 94117, 415/668-5998) ported NeWS to A/UX (Apple's implementation of UNIX for the Mac II).

The Grasshopper's product is called *MacNews*, and it may not be the kind of thing people flock to the stores in droves to buy (what UNIX product is?), but it is a very interesting product. *MacNews* consists of a NeWS server, a window manager written in PostScript, a number of client programs with source code, and supporting utilities. The window manager may be used as is, customized, or replaced entirely.

Quite apart from the merits of NeWS as a windowing system, MacNews demonstrates the viability of NeWS on computers other than those made by Sun. By current workstation standards, the Mac II is a modest machine, and yet MacNews performs well.

Quite apart from the merits of NeWS as a windowing system, *MacNews* demonstrates the viability of NeWS on computers other than those made by Sun. By current workstation standards, the Mac II is a modest machine, and yet *MacNews* performs well. It also uses the A/UX interface "toolbox" for access to the Mac II's graphics capabilities, and it is refreshing to find that the toolbox is more than a gadget to simulate in the UNIX environment the single-user Macintosh's user interface.

MacNews should make the Mac II more versatile in networks where NeWS is already in use on other systems; for stand-alone installations, it should be relatively easy to port NeWS client programs to the Mac II.

A Mac II running A/UX and *MacNews* should be equipped with a minimum of 4 Mb of RAM. Additional memory doesn't hurt. The basic *MacNews* installation will take up about 5 Mb on disk. Also included with the package are various images and the source code for NeWS clients, which will take up and additional 3.4 Mb if installed.

MacNews is easy to install. If you run your Mac II as a stand-alone computer unattached to any network, it may be necessary to re-link the UNIX kernel to include the network facilities *MacNews* needs, but clear instructions for doing this are provided.

When ordering *MacNews*, be careful to specify the correct version of A/UX: with A/UX release 1.1, the toolbox changed considerably, and the version of *MacNews* created for A/UX release 1.0 will not run under A/UX 1.1.

For those who want to follow the news (and gossip and technical info and philosophy) about NeWS, USENET offers the comp.windows.news newsgroup. ■

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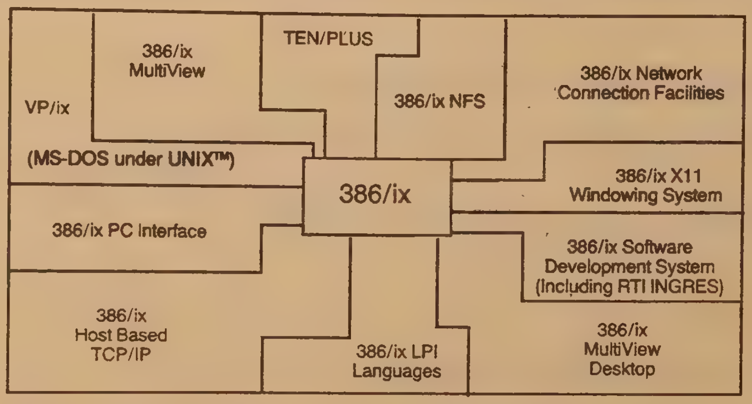

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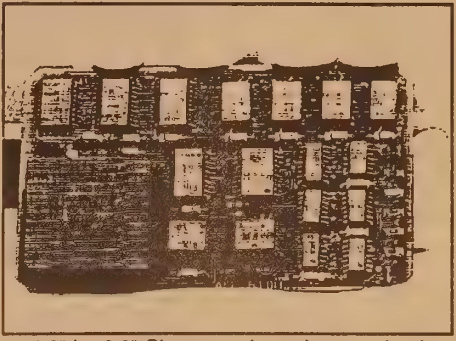

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LANs

BY WAYNE YACCO

Intro To LANs, Part One

If this is to be a column for readers who want to learn about local-area networks, as well as for those who are using them, then it seems appropriate to begin with a tutorial. There's certainly plenty to learn.

Basically, LANs connect devices and allow them to communicate and share data. There are many ways of describing LANs. In practice, every real LAN has its own organization, or architecture, which includes both physical and logical parts. However, a model devised by the International Standards Organization (ISO) is useful for describing LANs in general. Several LANs, including Apple's AppleTalk and the market leader for the IBM PC, Novell, have architectures that conform very closely to the ISO model. So we will begin by looking at the ISO-OSI (ISO-Open System Interconnection) reference model (Figure 1).

The ISO-OSI model outlines several protocols, which describe various interfaces between the hardware and software that make up a LAN. Actual LAN products will provide the functions described by the stack but implement each part differently from one another.

Physical Connections: Media

At the bottom of this protocol stack is the physical layer. The Physical layer corresponds to the way various media connect computers in a LAN. It specifies pinouts, voltages and cable connections, and controls transmissions.

The most common media in use are twisted-wire pairs and coaxial cable. An expensive, and consequently less common, alternative is fiber-optic cable. One or more of these media is used by Arcnet, Async, Ethernet, LocalTalk, SDLC, Token Ring, and T1. (LocalTalk refers to the media used by the AppleTalk network.)

Twisted-wire pairs are the thinly insulated wires used for telephone installations. Most buildings already have this medium in place, so establishing a network using spare pairs is very cost effective. However, the thin wire and limited insulation only allows this medium to work over relatively short distances without a type of signal enhancer called a repeater.

Coaxial cable, or co-ax, comes in two varieties: thin and thick. Thin co-ax is very much like the medium used for cable television. It consists of a single central conductor surrounded by a thick insulator, covered by a coaxial shield of woven wire or metalized Mylar (polyester) film, and finally encased in a protective outer insulator. The shield is connected to ground, and provides a high level of signal insulation. This type of medium is consequently able to conduct higher frequencies than twisted pairs and to provide a higher data transmission rate. It is fairly flexible and allows moderately easy installation.

Thick co-ax has a layered design very much like thin co-ax but it is more rigid due to heavier gauges used in its construction. The rigidity makes it significantly more difficult to install, but thick co-ax provides much more signal-carrying capacity or bandwidth. Longer runs of cable and more nodes, or workstations, can generally be supported on the network without repeating.

LANs connect devices and allow them to communicate and share data. In practice, every real LAN has its own organization, or architecture, which includes both physical and logical parts.

Fiber-optic cable consists of a bundle of extremely fine and very clear glass filaments encased in glass cladding and a tough outer sheath. It has the best performance characteristics of all.

There can be some performance trade-offs among the various media, but for similar transmission speeds, these generalizations are essentially true.

Connections to the LAN are made using interface controllers that typically plug into an expansion slot in a computer. Some controllers are designed to work through a port such as a SCSI (small computer system interface) or an IBM parallel-printer port.

Topology

A second aspect of physical protocol is the topology of the network. A topology refers to the arrangement of nodes and the connections between them. Several are common, including the bus, star, and ring.

The simplest topology is the bus. In this topology, all of the nodes are connected to a main conductor called the bus. Each node has access to all messages at essentially the same time. Addition or removal of nodes does not require interrupting the network. Unfortunately, this setup can also make it difficult to locate wiring faults. LocalTalk twisted pair and Ethernet coaxial cabling are usually arranged as a bus. It's a lot like Alaska Airlines running up and down the West Coast.

Star configurations such as SynOptics Communications's LattisNet twisted-pair Ethernet may not look like a pentagram, but every node is connected to a central control node, In this topology, messages must be routed through the hub. This design requires more cable per node, but expansion can be implemented without interruptions to the network. You can think of a star network as TWA, except that everyone's polite and you get the special meals you ordered. The hub is St. Louis, and New York and Chicago are nodes. Farallon Computing's StarController running on the twisted-pair PhoneNET medium can also be arranged as a star.

Networks configured as a ring form a closed loop that connects all nodes. Messages between nodes must be retransmitted by all intervening nodes. In this configuration, failure or disconnection of any node can bring the network down and faults can be difficult to find. However, it has the advantage of predictable response time. IBM's token ring network is the best known of the ring configurations. Think of this as a round trip across the country on Southwest Air. On Southwest, a round trip really goes all the way around and you get to visit every node.

Beyond Topology

Higher levels of the protocol stack are decreasingly hardware dependent.

The Data link Layer of the stack manages groups of data called packets. Packets are assembled for transmission and dissasembled at their destination.

The Network layer decides the route that packets will take through the network. Routing information is included in the packets.

The Transport layer controls the quality of transmissions with communication software protocols such as TCP, NetBEUI (IBM's transport protocol for DOS and OS/2), ATP (Apple transport protocol), and IPX/SPX (XNS transport).

The Session layer manages communications on the net and the dialog between users and multitasking system software.

The Presentation layer performs data conversion and facilitates its exchange. Environment managers such as *Windows* and *DESQview* fall into this category.

The Application layer provides the actual interface through which work is conducted and information exchanged. It consists of programs such as spreadsheets, word processors, and databases.

Stay Tuned...

Next month we'll conclude this tutorial with a look at some specific protocols, including some which do not conform to the ISO-OSI standard. We'll discuss the evolution of LANs from their recent beginings to today and take a look at Novell's new NetWare 386 version 3.0 and its protocol engine. ■

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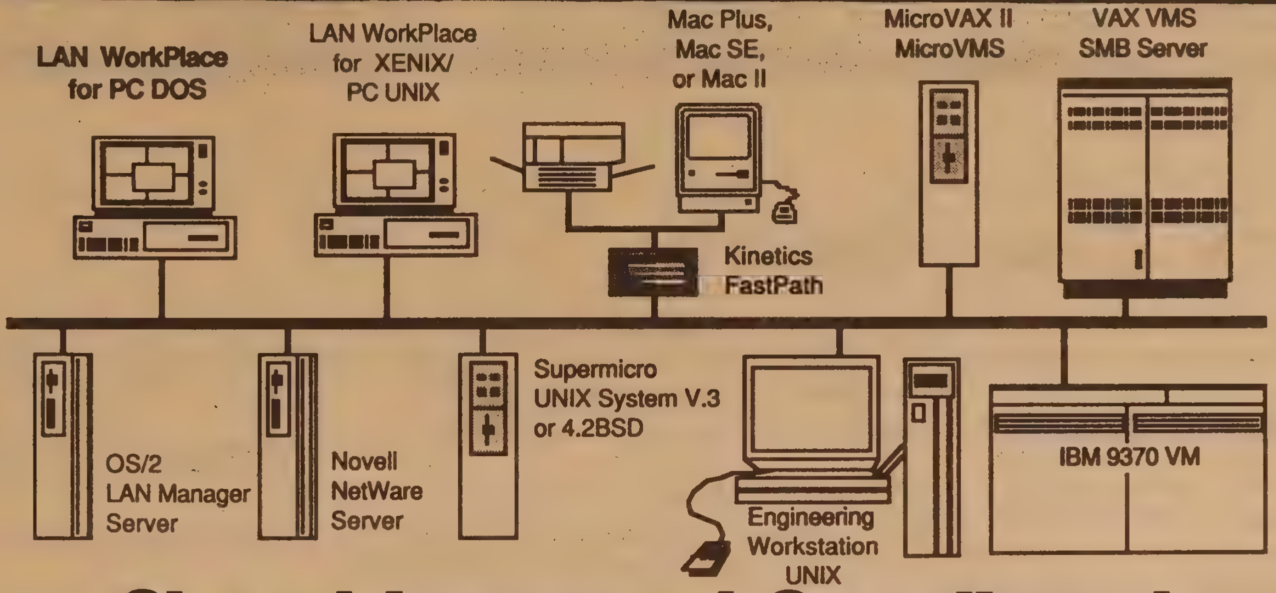
Figure 1
ISO-OSI Model

Application
Presentation
Session
Transport
Network
Data Link
Physical

LINK YOUR PC—Macintosh—VAX—Sun—Apollo-IBM


LAN WorkPlace for PC DOS
LAN WorkPlace for XENIX/ PC UNIX
Mac Plus, Mac SE, or Mac II
MicroVAX II MicroVMS
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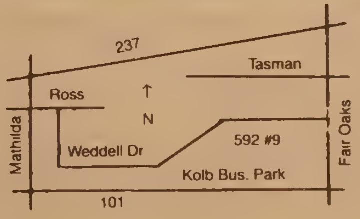
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AMIGA

BY MATTHEW LEEDS

The Zig Zag Shuffle

Last month I mentioned that WordPerfect Corp. was pleased with its Amiga sales, and was in beta test on its spreadsheet product, *PlanPerfect*. It turns out I was half right—*PlanPerfect* was in beta test. However, it turns out that WP was not at all pleased with its Amiga product sales. In fact they were so displeased with sales that at the beginning of May they cancelled all new product development for the Amiga and transferred all but two programmers to other projects, with only a commitment to "product maintenance" (read bug fixes) on current Amiga products.

The reasons cited for this move were described as "based largely on monetary considerations." In fact, a detailed list of reasons was given:

1. *WP* does not show fonts on screen.
2. *WP* does not support graphics on screen or in a document.
3. *WP* is priced too high for the market.
4. *WP* has too many bugs.

All of these were and are true, although planned product maintenance upgrades should have taken care of the bugs. Doing so, of course, would not have addressed the first three issues, nor would they have addressed what many people, including myself, feel are design flaws in the current product.

During the first week of May there was a lot of discussion in the Amiga community regarding WP's decision to abandon the Amiga market. Some people felt that this spelled the end of the Amiga, as it showed that no major developer could make a profit on Amiga products. Others felt that it proved that only products developed specifically for the Amiga could succeed, and that this was proof.

Some claimed that WP's products were so bug-ridden and poorly designed relative to other Amiga products that they were doomed to fail, and were only surprised that it had taken so long, while some just hoped that the next bug fix would finally solve their particular problem.

All of this became moot the next week, as WP changed its mind again, and decided to commit to continued Amiga product development. A total of three programmers will work on maintenance upgrades toVersion 4.1 and *Library*, and also work on a future version of *WordPerfect*. No word on what happened to *PlanPerfect*.

Plans for the next version include: 4.2 file format, print preview, sorting, embedded comments, ARexx support, non-interactive spell checking, and better scroll bar support.

The apparent reason for the turnaround was the tremendous public outcry over WordPerfect's decision to abandon the Amiga. Hard to imagine that the public's response could have changed the financial bottom line as far as sales were concerned, but it's nice to see that perhaps other concerns were considered.

In Other News...

A few months ago I mentioned that I am now using Macs and DOS machines at work. I'm also seeing a lot of Mac and DOS magazines. One item caught my eye in an article by Rick Doherty in *Macintosh Business*. "Indeed, it is rare now for a software vendor not to include code that looks for a math co-processor in a Mac, and then takes advantage of its faster calculation speed." Ah, if that were only true on the Amiga. Of course things are different in the Mac environment, as all of the new machines since March of '87 have had math co-processors built in. But then only the 2500 can directly support a math chip, and the installed base of 2500s is still small.

On the other hand, Mac enthusiasts make much of the Mac's DTP capabilities. They should take a look at the 24-bit color separations being created on the Amiga using the ASDG RESEP and *Professional Page*. ASDG markets Professional ScanLab, a hardware/software combination that interfaces an Amiga 2000 to a Sharp color scanner. The Sharp scanners can create images at 300 DPI and 24 bits (16.7 million colors). RESEP links the 24-bit separations into *ProPage* at the time the page is output as a PostScript file.

ASDG has also released a dual-port serial board for the Amiga 2000. This adds two RS-232 ports that can be used to support additional printers, modems, or MIDI adapters. Included with the serial board is software to drive the serial ports and to support calling the correct port within applications.

Imagine buying a new car that came with a radio, and then tearing that radio out to replace it with a better one, one with better sound, a cassette player, more power. Makes sense, doesn't it? Sure it costs a little more, and you're stuck with a radio you can't use or sell, but you appreciate quality sound so the expense is worth it.

Every Amiga comes with a mouse. Think of it like that radio. If you could get a better mouse, one that was lighter, more responsive, handled better, was more accurate, and offered additional features, would you buy it. After all, a mouse is a mouse, right?

Wrong. Not all mice are created equal. Once you've used a better mouse, it's hard to go back. Dale Luck and Boing!, Inc. have a better mouse for the Amiga. It's called, of course, the Boing! mouse. The Boing! mouse is a three button optical mouse. It's much lighter and easier to use than the stock Amiga mouse, and the tactile feedback from the buttons is superior. The middle button can be used like the shift key to do extended selection of icons from Workbench. Highly recommended.

There is a bug fix upgrade to AmigaDOS 1.3 in the works, and it may be available by the time you read this. Important changes include an improved FastFileSystem, new SetPatch, new Mount command, improved handlers, and new serial and printer devices. The new SetPatch fixes a nasty bug in the trackdisk.device that used to bite people during disk formats. The format command itself has undergone fixes and improvements as well. No word yet on how this upgrade will be distributed, but I'd guess it will be posted to various networks and will soon find its way to user groups and dealers. Make certain that you get the *final* release of the upgrade and not an interim release that went to developers for beta testing as that version still had some problems.

Freely distributable program of the month is *DiskSalve* by Dave Haynie. This is the program you wish *DiskDoctor* was. If you run into problems with trashed disks, floppy or hard, this is the cure. Latest version is 1.4, available on networks and through user groups and PD disk collections. ■

> **WP was not at all pleased with its Amiga product sales. In fact they were so displeased with sales that at the beginning of May they cancelled all new product development for the Amiga.**

ASDG
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Madison, WI 53713

Boing!, Inc.
1881 Ellwell Drive
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Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.

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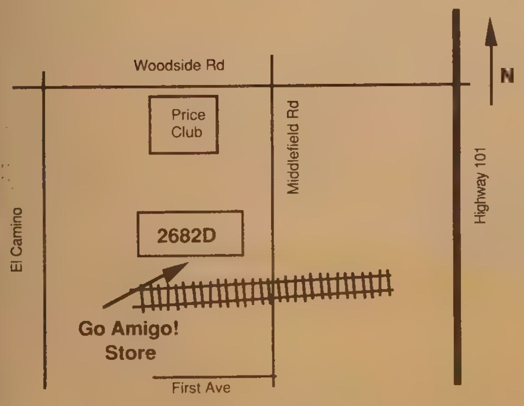

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ATARI ST

BY DAVID HAWKINS

Document Processing: An Embarrassment of Riches

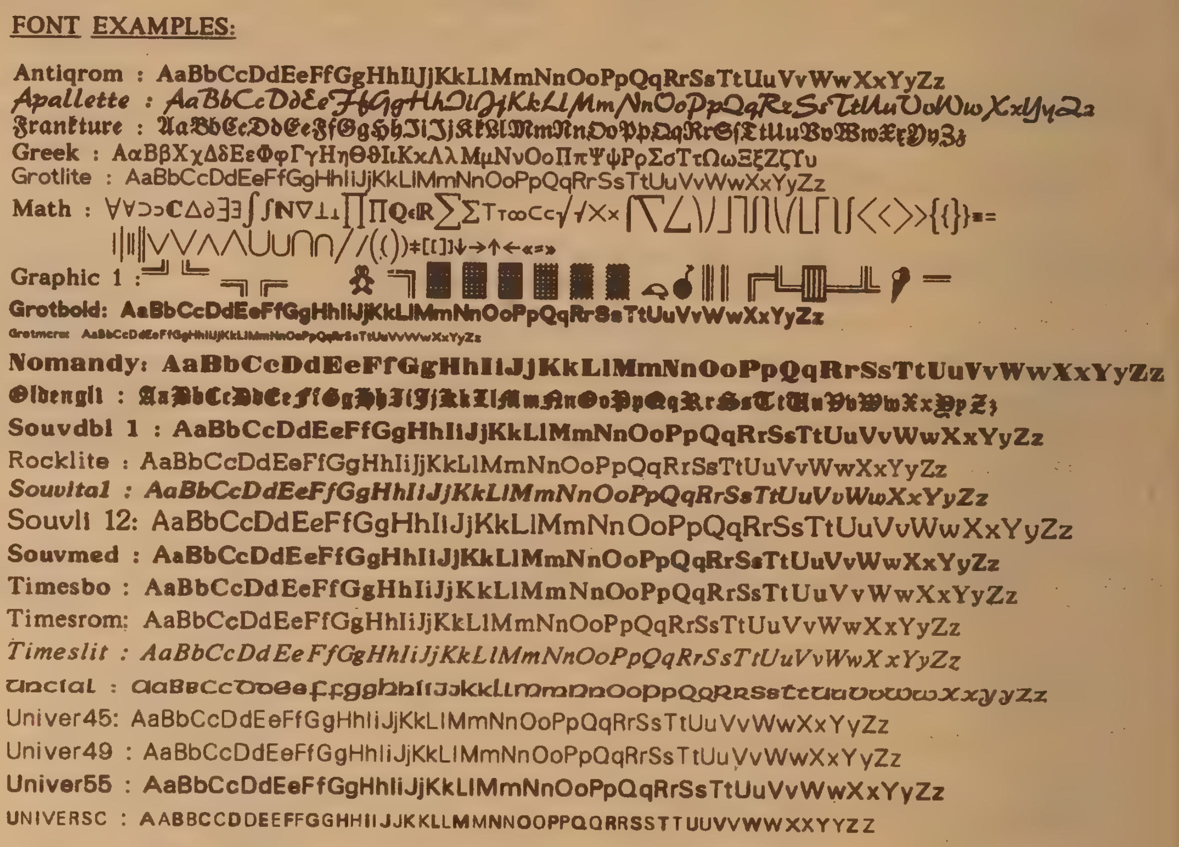
There's no problem with finding word processors for the Atari ST! There are almost too many of them out there. *WordUp*, *WordPerfect*, *First Word*, *ST Writer*, etc. provide plenty of features and cover about everything you need to do.

Personally I'm happy with *WordUp* for what I do, but here's a new one different enough that you might want to take a look at it.

What Is Document Processing?

I've been experimenting with a copy of *Signum 2*, "The Document Processor." I picked up this copy at my local dealer, and US distribution is still being worked out. It is being distributed in Canada by Scan-Tech Business Systems, Ltd., Box 9 P.O. Sub 11, Edmonton, Alberta, Canada, T6E2G0 and the phone number is (403)446-1337.

What's different about *Signum* is that it allows you to control everything in the document down to 1/90th of an inch. You can even move the cursor in increments that small. It also allows you to import graphics, although I didn't get to test that feature. By the way, I was using *Signum* on a monochrome monitor. If you are doing serious document preparation work, use the monochrome monitor instead of the color one.



FONT EXAMPLES:

Antiqrom : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Apallette : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Frankture : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSſTtUuVvWwXxYyZz
Greek : AαBβXχΔδEεΦφΓγHηΘϑIιKκΛλMμNνOoΠπΨψPρΣσTτΩωΞξZζϒυ
Grotlite : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Math : ∀∀⊃⊃∁∆∂∃∃∫∫ℕ∇⊥⊥∏∏ℚ∈ℝ∑∑⊤⊤∞⊂⊂√√××⌈⌉∠∠\/⌋⌋∫∫\/⌊⌈⌉∫⟨⟨⟩⟩{{}}≡=
|||‖∨∨∧∧∪∪∩∩//(())≠[[]]↓→↑←«≠»
Graphic 1 :
Grotbold: AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Grotmcrx: AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Nomandy: AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Oldengli : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Souvdbl 1 : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Rocklite : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Souvital : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Souvli 12: AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Souvmed : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Timesbo : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Timesrom: AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Timeslit : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Uncial : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Univer45: AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Univer49 : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
Univer55 : AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz
UNIVERSC : AABBCCDDEEFFGGHHIIJJKKLLMMNNOOPPQQRRSSTTUUVVWWXXYYZZ

Signum offers sophisticated document processing power and quality output.

Fonts

Signum's font handling is the most advanced I've seen. Each font (which I think of as a typeface or character set) can be edited and changed according to what you want to do. You can use up to seven fonts in one document, with three of them being relatively easy to get to. (Personally I doubt that I'd ever use more than four fonts in any document. It would be great for showing off, but would probably not look so good.)

When you start up *Signum* you load your first font. That's the one that will appear on the screen when you type with the normal keyboard. You can then add two more fonts. One of those will appear on the screen when you type using the Alternate key; the other appears when you type using the Control key.

Using Menus

Like most ST word processing programs, you can then work with the document using options from pull-down menus. This allows you do change options, change fonts, do search-and-replace operations, etc. You can also do these things directly through the keyboard. Since the Control and Alternate keys are used for the fonts, you have to use the ESC key and then a command sequence to make other changes. This can be handy after you get to know the program well and you don't want to be bothered with reaching for the mouse to make a quick change.

The Manual

Unfortunately there seems to be a growing problem with software—the programs are so powerful ("full featured"), and the manuals are so poor at explaining those features. *Signum* is one of those programs. There were some commands that I wasn't able to get to work, and I'm sure it was because the manual didn't explain them very well.

What the *Signum* manual needs is files showing examples of its features on disk. I wasn't able to type in the manual examples and get them to match what the manual said they should be. Since they did the manual using *Signum*, I know that *Signum* works, but if they'd included samples from the manual document it would have been easier to try.

Graphics

I ran into the same problem with graphics—I could find no example of a graphics image that I could include with the document. They didn't have one on disk, and I didn't have one on any of my disks. So I wasn't able to test that feature. They use graphics in the manual and it would have been easy to have put one of the examples on the disk.

Results

I was impressed with the control *Signum* gave me over the document. The fonts are impressive and the printing is amazing. The output on a 24-pin dot matrix printer is incredible. I created a 26-page document and was able to move around in it very fast. I like being able to edit my own fonts and might try generating a Hebrew set in the next week. It does include the ability to type from right to left, which can be handy if you're entering a Hebrew document. For documents that involve several different languages, *Signum* is the best program I've seen.

Another nice feature: *Signum* is usable on a 1040 ST even if you don't have a hard disk. I wasn't able to test it on a 520, but would expect some problems with limited memory there.

On the negative side, *Signum* isn't easy to learn. An improved manual with included samples would be a great help. *Signum* is a way of life—you'd need to immerse yourself in the program for a while to feel comfortable with it. My advice for the *Signum* people: improve your manual and you've got a winner here! ■

Copyright © 1989 by David Hawkins. All rights reserved. *David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco, both monitors, an Okimate 20 color printer, and disks all over the room.*

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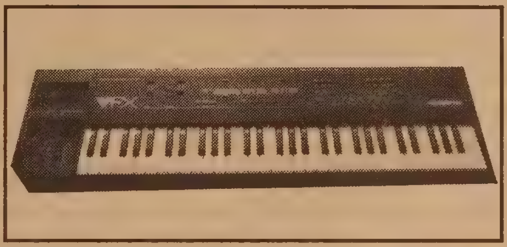

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BY MIKE MARKOWITZ

Video Card For The II, Plus GS Battery Woes

Encouraging evidence that the Apple II isn't quite dead yet arrived on April 3 with the announcement of the Apple II Video Overlay Card. Video overlay, or "genlock", has been around for several years on MS-DOS, Amiga, and other systems. It consists of circuitry that takes the incoming signal from a videotape, videodisc, or camera, and mixes it with the computer's own "native" video output, on the same monitor. The resulting image can be recorded onto another VCR, or even broadcast as a standard NTSC video signal.

Interactive videodisc is one of the hottest new educational technologies. Imagine a video of a malfunctioning engine, with computer-generated graphics superimposed to highlight possibly faulty parts. Depending on the student's selection from a menu of suggested repairs, the program could branch immediately to a video segment of a smoothly purring engine, or a segment showing an explosion. It is a powerful instructional technique that requires a lot of time, money, and skill to implement effectively. It sells a lot better than it works—a familiar theme in high-tech marketing.

In any case, the lack of a standardized low-cost, interactive video solution has helped to erode the Apple II's position at the leading edge of K-12 computer-aided instruction. Release of the Apple Video Overlay Card with its supporting *VideoMix* software can be seen as a defensive move, particularly against the Amiga and the low-end PS/2 systems (IBM has been aggressively promoting interactive video).

With a suggested retail price of $549, the card will not attract many home video hobbyists. It works with either a IIGS (512 K) or an enhanced IIe (128 K) in a regular slot, and with either the AppleColor RGB monitor or a composite color monitor. According to Apple's press release, the card "produces high-quality video output, and improves the display on both the Apple IIe and the IIGS." It was not immediately clear what this might mean. Earlier freeze-frame video digitizers, such as the discontinued AST VisionPlus card, produced relatively fuzzy images.

Like most Apple cards, it is beautifully designed (judging from the photo in the press release), with surface-mount VLSI (very large-scale integration) chips. One small 8-pin chip is socketed—presumably an EPROM. Two of the big VLSI chips have "Apple 86" copyright labels, suggesting that they are custom-made, and also that this design has been languishing in the R&D labs for some time. There is a 14-pin connector at one end, and a 16-pin connector at the other. There is also a mysterious three-pin Molex connector, and several items that look like trim pots (for factory adjustment).

Copyright © 1989 by Mike Markowitz. All rights reserved. Mike Markowitz is a computer engineer for a large Southern California aerospace firm. He has been writing about Apple II computers since 1984. You can reach him on AppleLink (MOUSEKOWITZ) or The Source (SIG 060).

The *VideoMix* software works on the IIGS as a desk accessory and on the IIe as a separate application. The program provides "easy control for mixing video and computer graphics" and "enables the user to adjust the tint and color of the video image which appears on an RGB monitor." Several third-party hardware and software products supporting the Apple Video Overlay card were announced simultaneously. They included a $289 synchronizer to record audio cues onto video or audio tape (Whitney Educational Services, PO Box 25371, San Mateo, CA 94402, (415)341-5818).

Due to the high cost of videodisc hardware, it is unlikely that schools will be able to put interactive video on every desk, or even in every classroom. About 9% of US public schools owned videodisc players in 1988, but about 90% owned at least one VCR. Creative teachers and students should be able to do some great things with the Apple Video Overlay Card, and that will be a good omen for the future of the Apple II.

The Apple II Video Overlay Card takes the incoming signal from a videotape, videodisc, or camera, and mixes it with the computer's own "native" video output, on the same monitor. The resulting image can be recorded onto another VCR, or even broadcast as a standard NTSC video signal.

So Your Battery Just Died?

When the Apple IIGS was released in September 1986, the lithium battery on the motherboard was expected to last five or ten years. It provides the trickle of current needed by the system clock, and also to keep alive the "parameter RAM," 256 bytes of memory where your Control Panel settings and preferences are stored.

According to reports reverberating around the Apple II bulletin boards, these batteries are starting to fail after two and a half years. This would not be a problem, except that Apple soldered the battery in place. Lithium batteries are considered hazardous waste. They can explode on contact with water. Children and pets have been seriously hurt by swallowing these nasty little items. As a socially responsible company, Apple soldered the battery in place so that, when it died, you would have to bring the computer back to an authorized dealer. The dealer replaces the batteries and ships the dead ones back to Apple for safe disposal. The Macintosh II works the same way.

As with other matters, there's a bit of a gap between theory and practice. Here's Apple's official position (downloaded from Headquarters at AppleLink Personal Edition on 4/4/89):

"If you do require a new battery, it will need to be installed by the technician at your dealership...Since this is a labor-intensive service procedure, I cannot provide you with a ball-park price, as dealers set their own pricing for service."

Some dealers have tried to charge IIGS owners as much as $200 (the cost of a complete motherboard swap); other dealers are charging $30 to $50 for this "labor-intensive service procedure" that takes a soldering iron and about five minutes.

While it's possible to jury-rig your own battery with parts available at any Radio Shack, this alteration might (theoretically) void the owner's right to any future motherboard upgrade. Warranty, obviously, is no longer an issue for a three-year old computer.

With the design of the new Macintosh IIcx, Apple has apparently abandoned the idea of soldered-in batteries as a lost cause. The IIcx logic board sports a snap-in battery. It should not exceed the capabilities of a $5 billion corporation to come up with a similar solution for the next (and maybe last) member of the IIGS family.

Meanwhile, Apple should provide a low-tech snap-in retrofit kit for present IIGS owners. It shouldn't even be necessary to remove the dead battery—just bridge around it. ■

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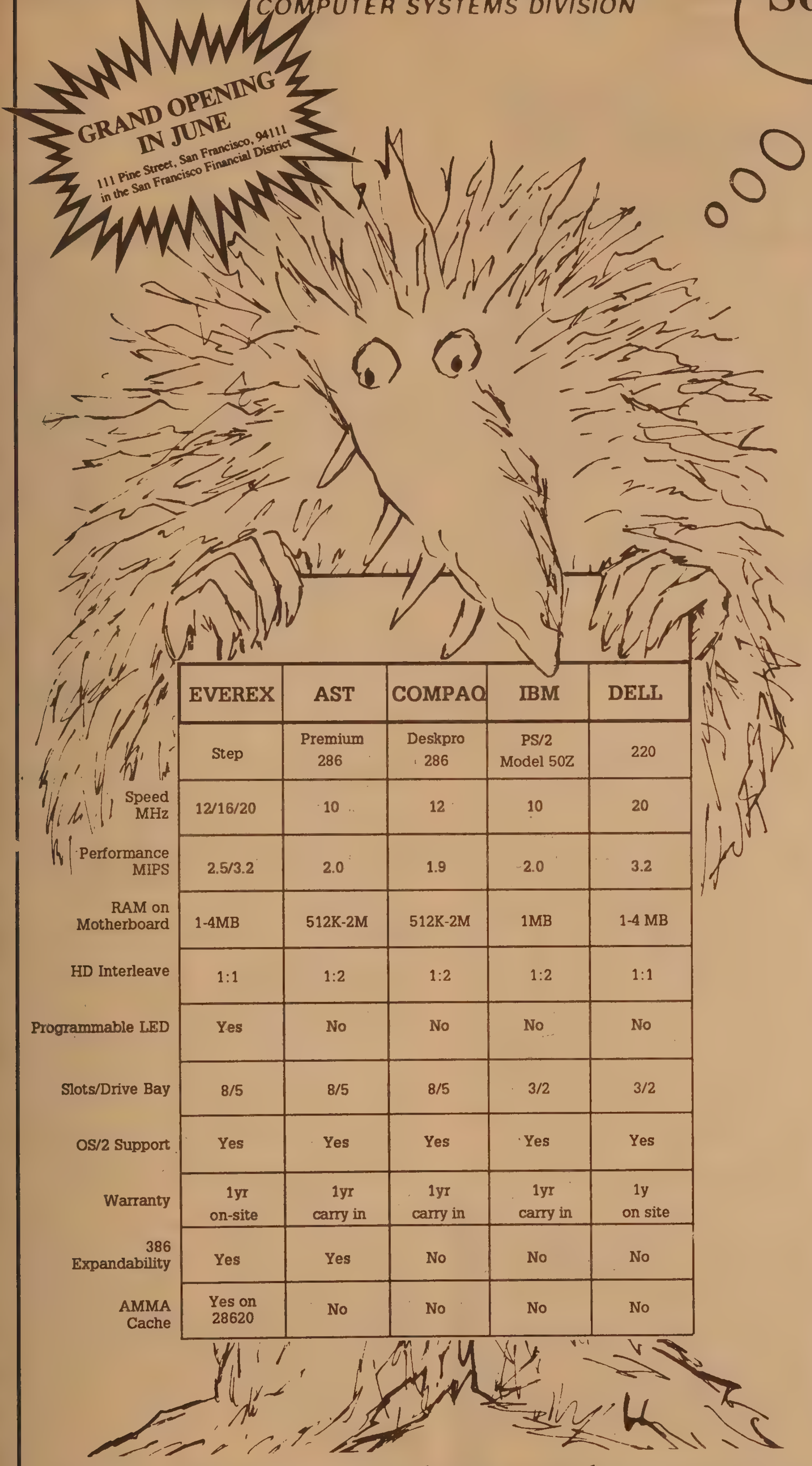
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OS/2 Support	Yes	Yes	Yes	Yes	Yes
Warranty	1yr on-site	1yr carry in	1yr carry in	1yr carry in	1y on site
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USER GROUP NETWORK

BY MARY EISENHART

My Month In User Group Land

Somehow last month I actually got out of the office and was able to attend some actual user group meetings.

It started on May 4 when **Silicon Graphics** made its long-awaited presentation of the Personal Iris 3-D workstation at **BMUG**. Now, as the illustrious **Morgenstern** will be the first to tell you, the BMUG crowd is technically sophisticated and known for its rude and cranky questions to product presenters. Despite a few video problems, however, the Silicon Graphics demo had most people on the edge of their seats. Much to my amusement, to say nothing of the **Rev. Barlow**'s, both of us having seen the Iris before and being emotionally prepared for its impact, the first question from the hardcore BMUG audience after the demo was, "Uh, do you give educational discounts?" Closely followed by "What's your developer price?" The demo wasn't even over before a friend of ours who runs a local university computer lab was buttonholing the SGIs and pleading for an Iris.

A few days later it was off to the **PC Clubhouse** on the Cal State Hayward campus. (Actually, I was supposed to be Addressing The Group, but it was pretty interactive...) This is a large and very diverse PC-oriented group, with many SIGs and activities, and their meetings rank with BMUG's as multi-hour marathons of intense information exchange. I enjoyed talking to the many folks who came by to chat after the meeting.

I also came away with something of particular interest to C programmers, the **West Coast C SIG Review**, a journal sponsored by the **San Francisco PC Users' Group** and affiliated with the **PC Clubhouse** and **Silicon Valley PC UG** in San Jose. The group meets monthly at 6:30 pm at Kam's Restaurant, 2068 Center Street in Berkeley, near the downtown BART station. Meetings are on second Mondays, with June 12 and July 10 the next upcoming gatherings. You can get more information about the group by calling **Debee Norling** at (415)644-1855, and about the newsletter by calling **Christy Quinn** at the same number.

Finally, on May 10 the **Silicon Valley Computer Society** was featuring a presentation by **Chet Heath** of IBM on the fine points and design decisions of the Micro Channel Architecture development, and, urged by **Rita Zokaei** of SVCS, a real paragon for keeping us informed, I headed down to Santa Clara for the meeting. A senior systems engineer, Heath was a leader in the Micro Channel development team, and he offered a detailed (three slide trays!) and technically sophisticated discussion of the inherent limitations of the AT bus and the reasons leading to the decision to implement Micro Channel.

The SVCS monthly meetings, which occur on second Wednesdays, often feature speakers of a similarly high caliber; the June 14 meeting presents the ever-popular **George Morrow**, industry pioneer and purveyor of the high-tech *mot juste*. Call (408)286-1271 for more information.

In other news, **Christopher Ambler** of San Luis Obispo tells us about his **Fubar BBS**, which runs software he's spent the past three years developing. Features include a complete UUCP package—mail, uucico, uuxqt, rmail, rnews, and readnews. It also includes typical BBS features like dial-your-match, ongoing story, and voting booths. Explains Christopher, "The main idea behind the system is to be as connectable as possible, and as I find more things to connect to, I will be adding new areas. The system is currently up for beta testing, so it's up and down hour by hour, but we're almost confident of its runability, and will soon have uninterrupted service." So if you'd like to partake in this adventure, call the Fubar BBS at (805)544-9234—it's running on a PC-XT at 300/1200/2400, 8-N-1.

Speaking of fubar...Sysops Take Note: We've had some trouble with our BBS listing files, with the result that obsolete information is now mixed in with the good stuff. Please read your listing in this issue, and if it's not correct please send us your current listing again. Sorry for the confusion.

Until next month, please keep the news coming—send US Mail to User Group Network, 5951 Canning Street, Oakland, CA 94609, fax to (415)652-4618, and email to **microx** on the WELL (415/332-6106) or **{pacbell, hplabs, ucbvax, apple}!well!microx** from Usenet, **MICROTIMES** on MacNET, **bex754** on The Source. We also cheerfully accept faxes at (415)652-4618 and 213/467-5486. ■

Do-It-Yourself With A Safety Net

By now, hardly anybody, least of all user groups, is unaware of the huge cost advantages of building your own PC/XT/AT/386 clone. The fact is, though, that despite excellent books from authors like **Aubrey Pilgrim** and **Edwin Rutsch**, your average user, current or potential, is more than a little apprehensive about actually taking the plunge and doing it.

PC user groups (and their individual members) should be aware of a new and innovative solution to this difficulty. **Domino Computer** of Fremont (no relation to the pizza guys), which operates a store in the Mission Shopping Center across from Fry's, is offering a new service: a self-service center for those who want to build their own computers and still have competent technical advice close at hand. Users must buy the motherboard from the center; they can either bring their own chassis, keyboard, drives, etc., or purchase them from the center.

Leo, the chief engineer at Domino, explains the first-of-its-kind venture: "The main advantage of this center is that the users can install or repair their computers with the technical help from Domino Computer at very low cost. At the center, the users have access to all the components required to put up the system. To set up a 12 MHz XT system costs about $430, and a 386/20 MHz system about $1400, including monochrome monitor. These prices are hard to beat."

The center is available to dealers and users, and is the first of what Domino hopes will be several Bay Area do-it-yourself sites. If you or your group are interested in learning more about the center, or making reservations, call (408)946-6498, or Domino's retail store at (415)683-1818.

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Remote Bulletin Board (Singapore). (065) 445-1646. 9600/2400/1200 24 hrs. 218 MB Online (IBM upload/download). Sysop: Umar A. Rahman

203

Terrapin Station. (203) 656-0134. Grateful Dead Board. Sysop: Klaus and Gretchen Bender.

209

Bertha Board BBS.(209) 239-9853, 300/1200/2400, 8-N-1, 24 hrs. MS-DOS, others. 95 Mb on-line. Emphasis on programming. Uploads and downloads. No fee but registration required. Sysop: Kenneth Roach.

Oasis Software Library.(209), 823-2803, 300/1200/2400, 8-N-1, 24 hrs. Shareware and PD for IBMs and compatibles. No fee but registration required. Sysop: Tim Campi.

Silicon Realms. (209) 754-5530. 300/(1200 Soon) 9:30AM to 6:30AM. Formerly Motherload 64. Commodore, PET & Plus/4. Programmers board, Continuing & Short Story boards, FRPG. Sysop: Joe Commodore

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The Backdoor BBS.(209), 952-9430, 300/1200/2400, 8-N-1, 24 hrs. MS-DOS oriented board. Lots of software, online chess game, much more. Sysop: Randall Fox.

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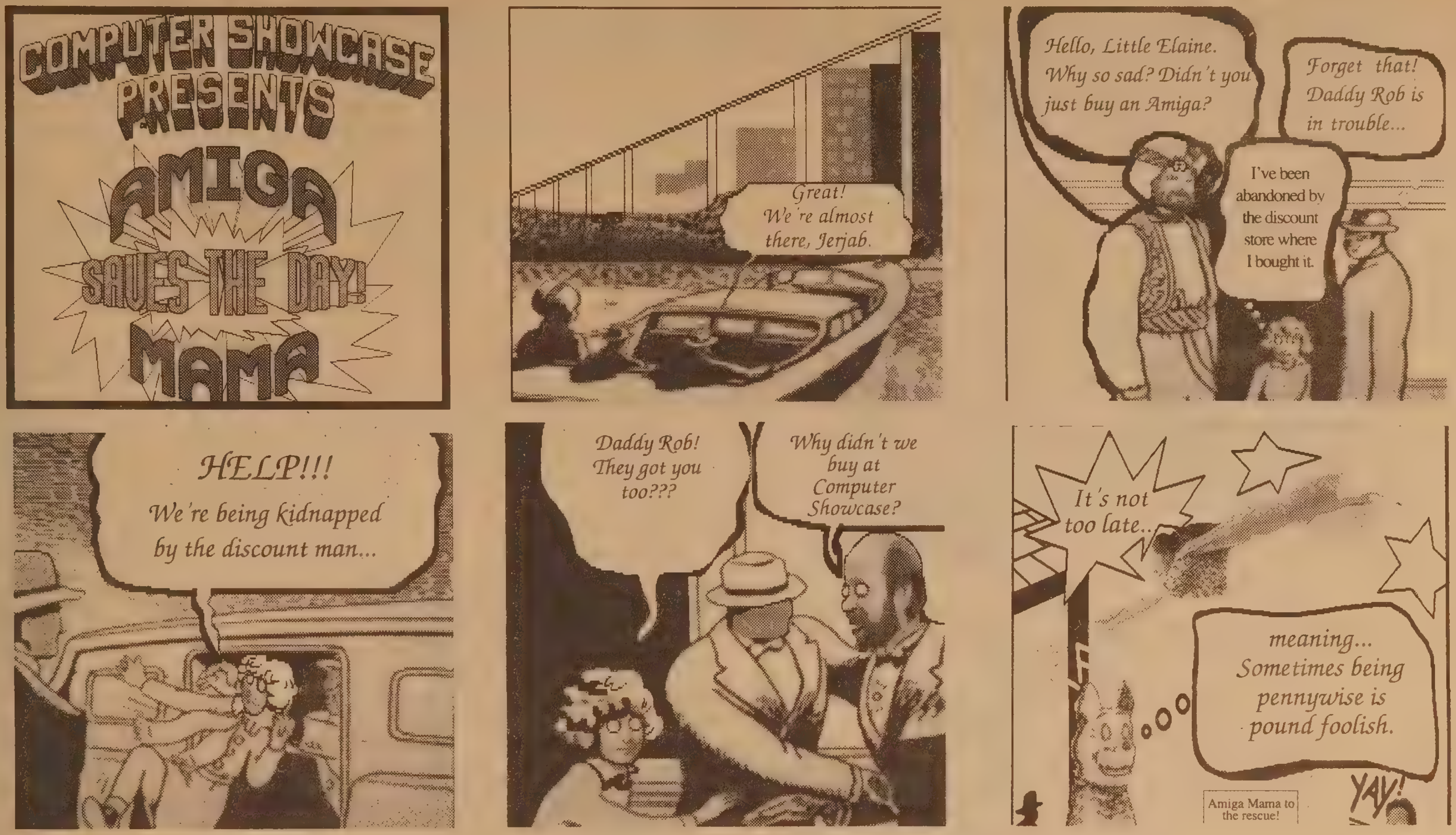
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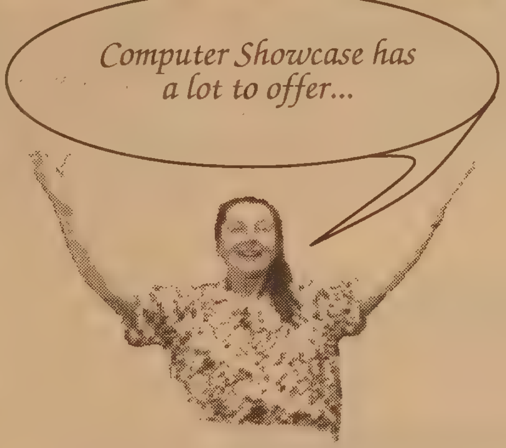
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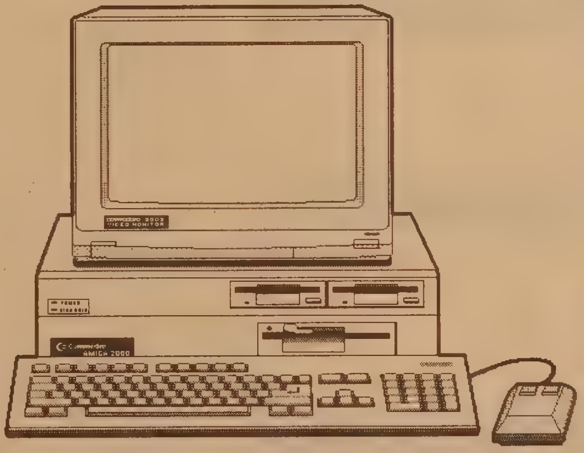

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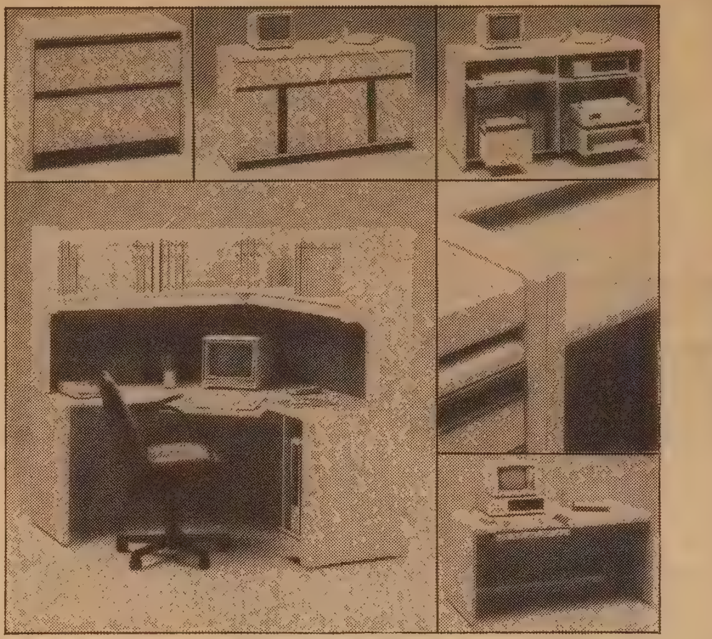

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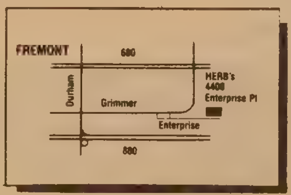

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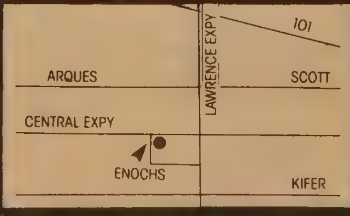

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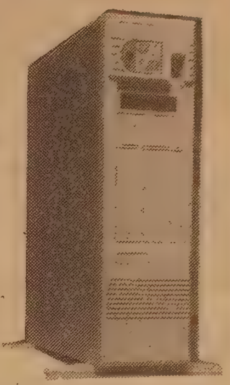

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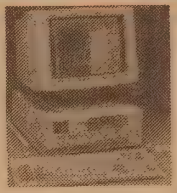

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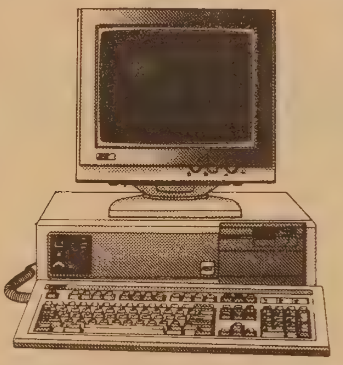

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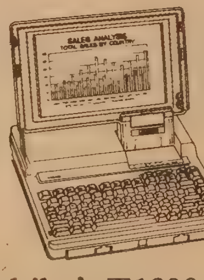

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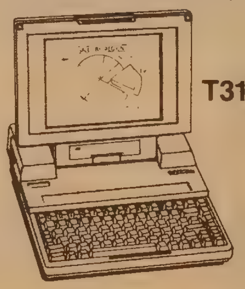

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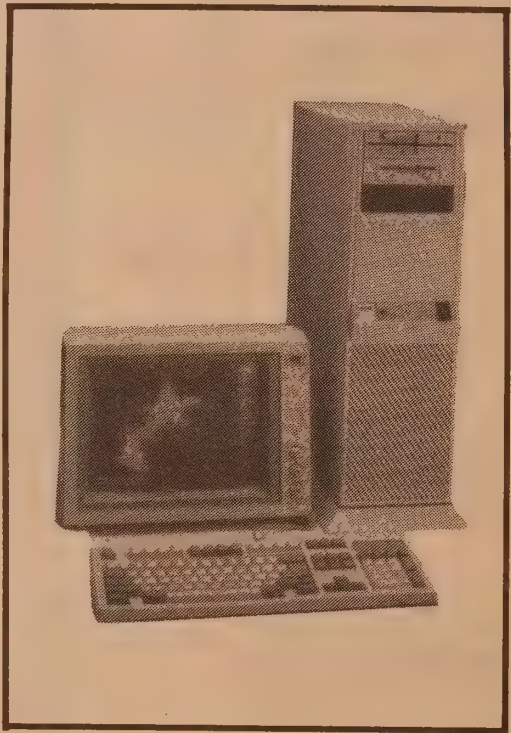

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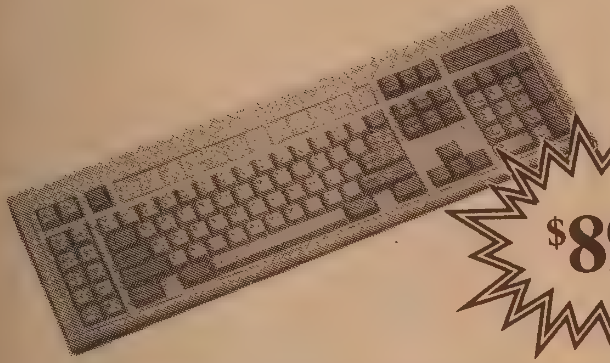

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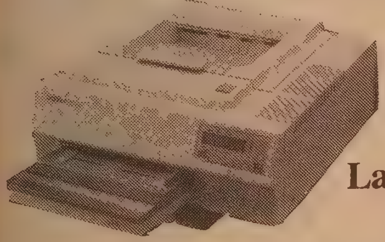

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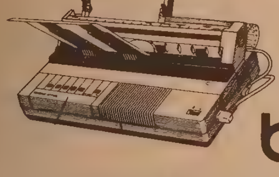

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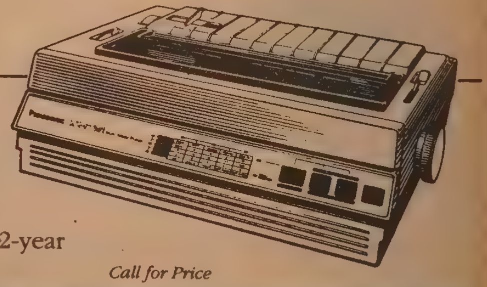

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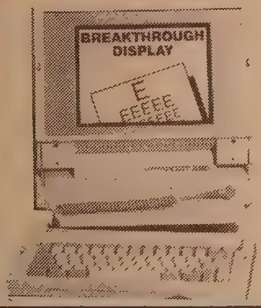

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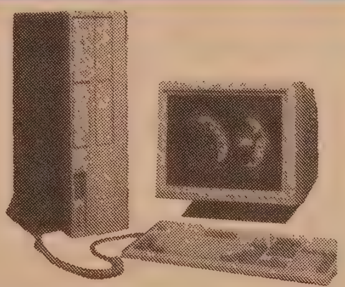

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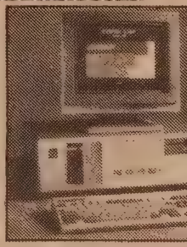

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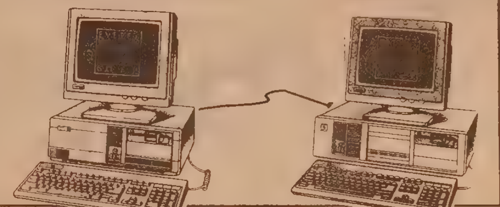

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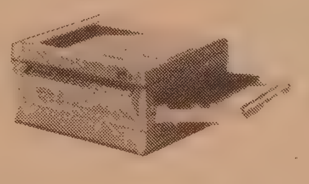

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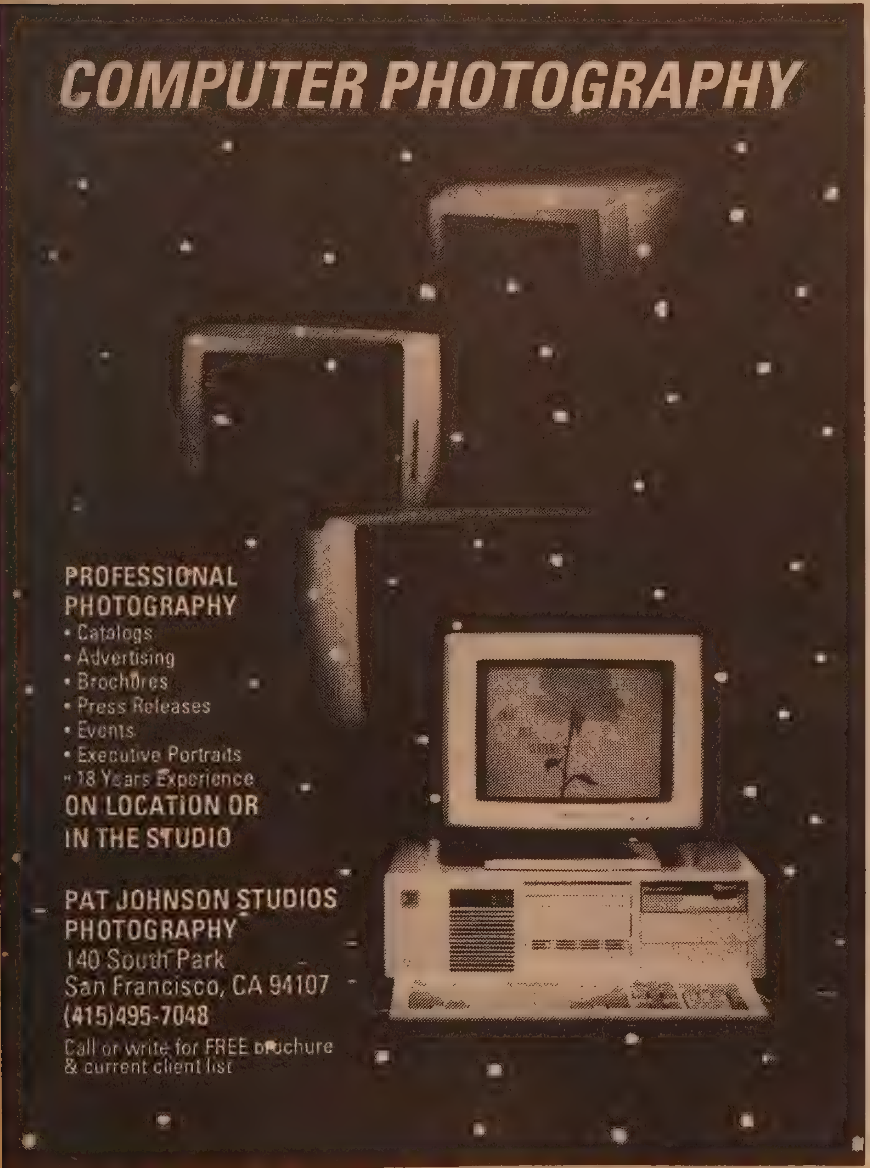

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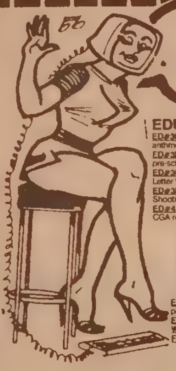

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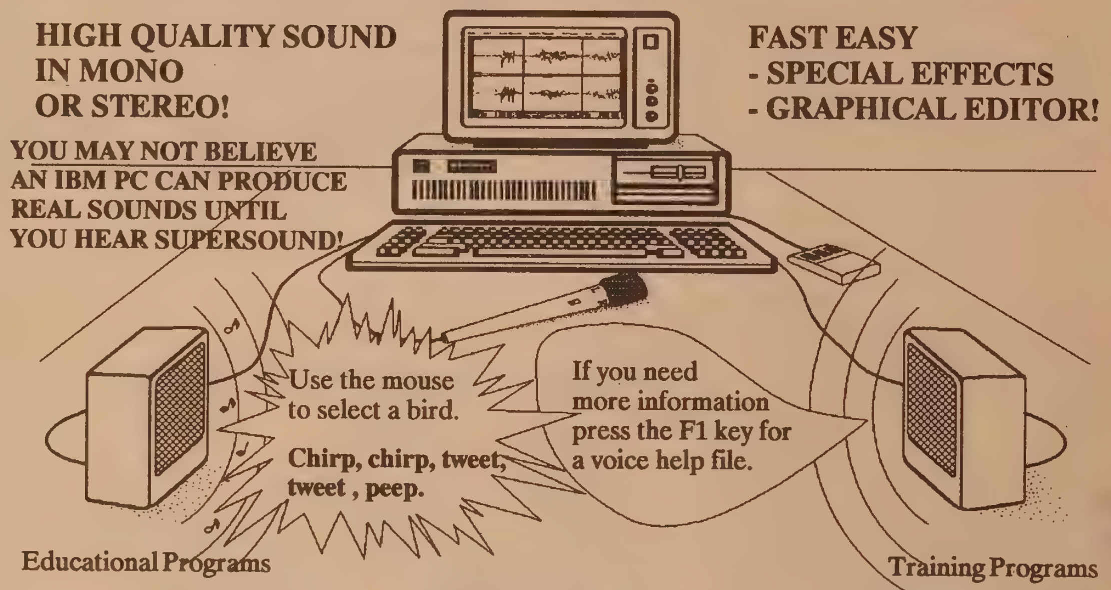

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The Board with No Name. (818) 785-3340. 300/1200. A gay-oriented BBS. No hourly fees; no time limit w/ paid access. 16 lines.

The Consumer & Business Network. (818) 360-4679. 24 hrs., 1200/2400. Arc files, business and financial info, classified ads, discussion, Mac files, messages & mail, newsbytes, on-line store, real estate, USA Today, Westlink Report & HAM radio, PC Pursuitable. Sysop: Kenneth R. Wilcox.

The Ledge PC Board. (818) 352-3620. 300/1200/2400/9600. All systems welcome, full support for IBM PC/AT compatibles.

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Dial-Your-Match. (916) 275-1265. Redding. (916) 736-0739. Sacramento.

Hackney's Hideout BBS. (916) 961-1042. 1200/2400 8-N-1. Includes AT&T users conference. Sysop: Rich Hackney.

Night-line Network Central. (916) 427-1107, 300/1200, 8:00 PM to 8:00 AM daily. Forum for individuals, clubs and organizations that want to network nationally with others. Sysop: Eric Thomas.

Phoenix Landing BBS. (916) 966-8243. 300/1200/2400. Macintosh oriented but many other computers are supported. File areas for Mac and other computers. Supports echomail conferences including ECHOMAC and BAYMAC.

ASSOCIATIONS

Account-A-Call National Users Group (AACNUG). First meeting in Universal City June 19–20, 1989. National user group for Account-A-Call service bureau and software customers with members drawn from nearly 1000 companies nationally. Call: Shelly Schoenberger, 1-800-447-TUMS.

AI Expert Systems for Business (ESB). Meetings: 1st & 2nd Suns., San Francisco. Business PC expert system solutions. Determine market opportunities, group research projects.

ANImated People User's Group In the spirit of Max Headroom and "Hitchhiker's Guide," we're attempting computer digitization/animation of real-people personalities. San Jose. Call: Tom, (408) 226-9225.

Artificial Intelligence Special Interest Group (AISIG). Call Rita Zokaei, (415) 574-8225.

Artificial Intelligence Special Interest Group. Meetings: 2nd Thurs. Engineering 101,Santa Clara University. Independent nationally recognized group studying and developing AI and artificial neural networks. Call Kent Byron (408) 244-8739 for info.

Association for Women in Computing. Meetings: 1st Wednesday of each month, 6:30 PM, Stagecoach Restaurant, 44 Montgomery St., San Francisco. Call 655-3110 for information.

BAY HPX. Meetings: 2nd Saturday Laptop & handhelds. Call Jim Horn or Michael Felsenstein: (707) 794-3130/(415) 564-8279.

Bay Area CYMA Dealers Association. Meetings: 2nd Tuesdays, Thursdays; 4:30-6:30 pm, San Mateo. Networking and support for McGraw-Hill accounting software consultants and retailers. Call: (415) 345-5955.

Bay Area Desktop Publishing User's Group. Meetings: Tues. 7-9 PM Norman's Restaurant, 2601 College Ave., Berkeley. For more info call Dr. C.J. Wallia at (415) 848-8200.

Baytalk Computer Users Group. Write: PO 369, Berkeley 94701. BBS: (415) 864-6430, 300/1200, 8-N-1.

Business Computerization User Group. Group forming. Write 6938 Buckingham Blvd., Berkeley, CA 94705, or call (415) 848-2080.

California Genealogical Society Computer Interest Group. Meetings: 2nd Sat.- odd months Genealogical Society Library, San Francisco.

COBOL And SQL Users Club Call: Dr. Badshah K. Mian, (415) 337-1787.

Computer Associates Users Group. Meetings: 3rd Wednesdays, 6:30 pm, 1500 Van Ness Ave., Call: Brenda Goldstein, (415) 864-6770.

Computers & Law Assoc. Meetings: McGeorge School of Law, 3200 Fifth Ave., Sacramento, CA 95817.

CYMA/McGraw-Hill Users Group Meeting. Meetings: Monday, October 24, 3:00-5:00 pm, McGraw-Hill Publications Building, 425 Battery St., San Francisco. Meet CYMA professionals and learn how to get the most from your software. Call: (415) 839-7466.

dbDVLPRS. Meetings: 2240 Buchanan, Ste. 5, San Francisco. Includes dBASE II, III, VI, Clipper, Foxbase, dBXL, Quicksilver and others. Call: Bruce Leandro, (415) 923-0659.

Digi-Dunces Un-Ominous. A meeting ground and exchange for the fat-of-finger, the hopelessly analoguish, and patients of the electrogratification disease. Presently a confederation of various interests & occupations keeping one another apprised of relevant events & experiences. Contact: SASE, PO 884334, San Francisco 94188.

East Bay User Group. Meetings: 3rd Wednesdays, 7 pm, 12500 Campus Dr., Oakland, Rm R-7, Call: (415) 436-2453.

Entrepreneurial Support Group. CEO. Meetings: SASE, P.O. Box 2781, San Rafael, CA.

Ham Radio Computer Packet Group. Meetings: 2nd Fridays, 8 pm, Salvation Army, 4600 Appian Way, El Sobrante. Learn how to use your computer to broadcast all over the world with the fascinating world of Ham Radio. Call: Bob Fields, (415) 237-3761.

High Tech Gays. Meetings: 2nd Sundays, Part of the National Gay & Lesbian Task Force. Call: (408) 993-3830.

High Technology Entrepreneurial Council. Meetings: Second Wednesdays, 6:30 pm, Lakeview Club, top floor, Kaiser Center, 300 Lakeside Drive, Oakland. Networking and information for all hi-tech companies. Call: Rachel, (415)339-3895.

High Technology Entrepreneurial Council. Meetings: Wednesdays, 6:30 pm, Piedmont Community Center, 711 Highland Ave., Piedmont. HTEC is a nonprofit corporation dedicated to providing software developers and other high tech entrepreneurs a forum for developing marketing strategies, building business relationships and exchanging experience and information. Call: Rachel Munoz, (415) 339-3895

MIDICRUZ Computer and Music Users. Meetings: 1st Thurs., 7:30 PM, 200 Seventh Ave., Suite 225, Santa Cruz, CA 95062. Contact Robert at (408)476-8464.

MORE: Modemusers Of The Redwood Empire. Meetings: Thurs. July 14; Fri. Aug. 9; 7 PM, Roundtable Pizza, Highway 12 @ Stony Pt. Free membership for modemers who want to get together and talk about local boards. Includes novices to techno-wizards. Call (707) 546-5203.

Mt. Diablo Technology Association. First meeting: Wednesday, Sept. 14. Others monthly at Michael's Restaurant in Walnut Creek. Lunch and evening meetings, send for calendar. Back by popular demand. Will explore common concerns in industry and educational developments. Call: Deborah Scott, (415)932-4828

Network Users Group (NUG). Next meeting: July 7. Call for location and time. Panel discussion of workgroup software with several major software manufacturers represented. Call (415) 655-6500 for details.

North Bay Users Group (NBUG). Meetings: 2nd Thurs. 7:30-10 PM 201 Maine St., Vallejo, CA. Family Computer Club dedicated to all forms of computing.Determine market opportunities, group research projects. (415) 564-6669.

Nota Bene User Group. Meetings: 3rd Tues. or Thurs., 7:30 PM Berkeley or Peninsula. For location and date, call Thomas Ross, (415) 845-2410.

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Pracsa, for Sysops & Users. Meetings: 2nd Wednesdays, 6:30 pm, Coco's Restaurant, 1305 South Mary, Sunnyvale. Call: Bill Strouse, (408) 453-3321.

Prolog Forum. Meetings: Monthly, 2nd Thursday 7:00 PM, Belmont and various locations. Prolog Forum is a group dedicated to supporting users of the Prolog computer language in artificial intelligence. Call Mark A. Epperson at (415) 594-9981.

ProTel (Professionals In Telecommunications) Meetings: Monthly. Holiday Inn, 1221 Chess Drive, Foster City. ProTel is a network organization for people interested in telecommunications.Leave a message at (415) 227-5637 for information.

SEF Marketing SIG. Meetings: Oct. 27—Telemarketing; Nov. 29—Teknowledge, 1850 Embarcadero, Palo Alto. Call: Don Morrison, (415) 8328-0356.

SEF OOP SIG. Meeting: Third Tues. 7 pm, Parc Place Systems, 2400 Geng Rd., Palo Alto. Call: Dean Ritz, (415) 859-1043.

SF Robotics Society. Meetings: 2nd Mon. Homestead Savings, Community Hall, 5757 Geary (at 22nd), SF. Guest speaker, developers' roundtable.

Silicon Valley Computer Society. Contact Kent Stafford (408) 286-2969. Or write to 2464 El Camino Real #190, Santa Clara, CA 95051.

Silicon Valley Techno—Musicians Network. Computers, MIDI, electronic/computer music, home studios, all experience levels, all computers, all musical styles welcome. Call: Bob, (408) 733-3429.

Society For Technical Communication. Meetings: 2nd Wednesdays, Berkeley. International association of technical writers, editors, illustrators, and instructional designers. Call: Rae Montor, (415) 531-2315.

Software Entrepreneur's Forum (SEF). Meetings: 3rd Thurs. 1875 Embarcadero Rd., Palo Alto. Helps individual software developers and startup software companies. Call for complimentary newsletter. (415) 854-7219.

Technology Executive Roundtable (TER) Meetings: Fourth Tuesdays, 6:00 pm, Santa Clara.Call: Jenny Hoyt,(408)997-1826.

The Hispanic Computing Association. Meetings: 3rd Thursdays, DataDesigns/American Music, 2388 Mission St., SF. Spanish/English Computer Information, PC & Mac presentations and solutions. Call: Juan Lira, (415) 824-8337.

The Society For Technical Communication. Meetings: 1st Wed. 7:00 PM Room #3, SMUD Facilities, corner of Elkhorn and Don Julio, Sacramento. Devoted to the advancement of the theory and practice of technical communication.

Valley of the Moon Users Group. Meetings: 2nd Saturdays monthly, 10:00 AM, Moose Lodge, Sonoma. All systems welcome. BBS, 300 BAUD, 24 hours, (707) 996-7922.

Women's Special Interest Group. 7:30 pm, Hewlett-Packard, 5301 Stevens Creek Blvd., Santa Clara. For all women interested in computing. Call: Rita Zokaei, (415) 574-8225

USER GROUPS

AMIGA

ACCESS (The Amiga And Commodore Computer Enthusiasts Society). Meeting and library sessions 2nd Tuesdays, 7 p[m at Livermore Airport Terminal building. Paul Tibbals (415) 829-6053 for details.

Amiga Addicts Anonymous. Meetings: Newsletter, public domain library, demonstrations. Write PO 4669, Walnut Creek, CA 94596. Call: 689-3453

Amiga East Bay Info Exchange (AEBIE). Meetings: 2nd Tues. 7 to 9 PM 11185 San Pablo Ave., in El Cerrito. Write to P.O. Box 485, Pinole, CA 94564.

ASCITEC: The Amiga Science & Technology Users Group. Meetings: 2nd Thurs. 5-7 PM Lockheed, B/157, Rm. 4-C, Sunnyvale, CA. Scientific/Video Applications. Classes available.

AUGment - Amiga Users Group of Silicon Valley. Meetings: 2nd Fri. Write to P.O. Box 1863, Fremont CA 94538 for more info.

AUM—Amiga Users Of Marin. Meetings: Third Wednesdays, 7:30 pm, room 191, Science Center, College of Marin, Kentfield. Call: Bob Galvan, (415)924-5384.

Bay Area Amiga Developers Group (BADGE). Meetings: 3rd Thurs. 8 PM Turing Auditorium, Stanford University, Stanford, CA. For all Amiga programmers. No membership fee.

CWEST Bay Area Commodore Users Group. Meetings: Third Thursdays, 7:00 PM, Fort Mason, Bldg. C, Rm. 215. Support C-64/128 and Amiga. New Users welcome. Write PO 146731, San Francisco, CA 94114-6731.

Northern California Amiga Club. Meetings: Second Saturdays, 2 pm, Rico's. Supports Amiga. Write: PO 54, Bella Vista, CA 96008.

SMAUG (Salinas-Monterey Amiga Users Group). Meetings: 3rd Tues. at 7 PM, Seaside Library, 550 Harcourt Ave., Seaside, CA. Write PO 776, Castroville, CA 95012. Call Richard Binsacca at (408) 678-2518.

SVAUG-Scotts Valley Amiga Users Group. Meetings: 2nd Thursday, 7:00 PM. The Computer Room, Kings Village, Scotts Valley.

Vallejo AMiga People (VAMP). Meetings: 2nd Tues. 6:30 PM Software 1st, Vallejo Corners Shopping Center. Contact Bill Braun at (707) 554-0263.

AMSTRAD

North American Amstrad Users Group (NAAUG). National User group. For info send S.A.S.E. to NAAUG, P.O. Box 2178, Ferndale, WA 98240.

APL

APL Bay Area Users' Group. Meetings: 2nd Monday, 6:30 PM, I.P. Associates, 425 Sherman Ave., Suite 200, Palo Alto.

APPLE

A.P.P.L.E. Co-op. Meetings: National User Group. Call A.P.P.L.E. Magazine. Write: 290 S.W. 43rd Street, Renton, WA 98055. Or call (206) 251-5222 for more info.

Apple Pickers of the Redwood Empire. Meetings: 2nd Sat. 10 AM Santa Rosa JC, Shuhaw Hall, Rm. 1735. Call for sample newsletter. (707) 763-8322.

B.E.A.R. Apple II National Users Group. Meetings: send S.A.S.E. to B.E.A.R., 4719 Meridean Ave. #401,San Jose 95118. Printshop & Appleworks files, monthly newsletter.

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

GravenStein Apple IIGS Users Group. Meetings: 3rd Saturdays, 10:00 AM, Coddingtown Mall, Santa Rosa. User group to explore new and existing programs and uses for the IIGS, to order equipment and material as a group for quantity discounts and to encourage the use and development of the IIGS among current, new and potential users. Call: Aaron Lamar, president, 938-8479.

San Francisco Apple Core. Meetings: 3rd Saturdays, 10 am, Daly City Library, 40 Wembley. BBS, SIGS, PD/SW library, Help List, Newsletter, more. Call: 398-2335/771-5830.

San Leandro Apple User Group. Meetings: 1st Thursdays, San Leandro HS, Rm. 213. New owners to experienced users welcome. AppleWorks, software and telecommunications SIGs meet monthly. Call: (415) 483-6046.

Society For The Prevention Of Cruelty To Apples. Meetings: 2ndWednesdays, 7:30 pm, Fremont Main Library, 39770 Paseo Padre Pkwy. Call: Dean Fern, (415) 537-3439.

Tri Valley Apple II Users Group. Meetings: 1st Thurs. 6:30 PM. Call Esther Farnstrom at (415) 829-3672 or Dan Balsey at (415) 828-6237 for meeting location.

ATARI

ABACUS (Atari Bay Area Computer Users Society). Meetings: 1st Saturdays, 19th Ave. Diner, 19th & Lincoln Aves., SF. Open to all Atari XL/XE and ST users. $20/yr. Call: (415) 753-8483.

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon. 7:00 PM Bracher School, corner of Bowers and Chromite, Santa Clara. ST users meet at Bracher on 2nd Tuesdays. 8-bit users meet at H-P, Wolf and Pruneridge, Cupertino. BBS: (408) 247-1257.

COAST (California Original Atari ST Users Group). Meetings: 3rd Wednesdays, 7 pm, 2105 Bancroft, Berkeley. Call: (415) 945-1949.

San Leandro Computer Club. Meetings: 1st Tuesdays, 8 pm, San Leandro Community Library. (415) 352-8118 & 887-2008.

AT&T

Bay Area AT&T PC Users Group - South Bay. Meetings: 2nd Wed. 6:30 PM AT&T Bldg., 1090 E. Duane, Sunnyvale, CA. Call: Joe Lipsig (408) 733-6522. BBS: (408) 462-6329.

Bay Area AT&T PC Users Group. Meetings: 1st Wed. 6:30 PM Alternates between Oak. & SF, Call: Joe Mahoney (415) 586-8376. BBS: (415) 829-6027.

AUTOCAD

San Francisco/Marin AutoCAD Users Group. Meetings: 2nd Tuesday evenings. $20 annual membership fee & newsletter. For further info, call Volker, 331-9466, or Virginia 777-4025.

Sonoma County AutoCAD Users Group. Call (415) 777-9144 for info.

BLIND USERS GROUP

International Blind Users Group (I-BUG). As a member you will receive 6 issues of Compu-Help-On-Disk as well as your own ID and password to CompuHelp. $20/yr. Call: (916) 783-0364.

COMMODORE

ACCESS (The Amiga And Commodore Computer Enthusiasts Society). Meetings: 3rd Tues. 7:30 PM Community Room of Homestead Savings & Loan, 999 E. Stanley Blvd., Livermore, CA. Contact Ron Kremkow at (415) 449-1784.

Campbell Chapter of 64/More Commodore UG. Meetings: 4th Tues. BBS (408) 946-6154.

Commodore 64 Software Users Group For New Commodore Owners. One-on-one help for new owners. Meeting place & time TBA by members. Call (714) 531-2977 for info.

Commodore 64/128 User Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $10/yr. Vincent Poy, c/o Commodore Users Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

Commodore Connection Users Group. BBS (415) 458-1005.

Commodore Users Group Santa Cruz. Meetings: 3rd Wednesdays, 2395 Delaware Ave., Santa Cruz. Call: Ruth Wieland, (408) 688-2843.

Cupertino Chapter of 64/More Commodore UG. Meetings: 3rd. Sat. BBS (408) 946-6154.

CWEST Bay Area Commodore User Group. Meetings: 3rd Thurs. Fort Mason, Bldg. C, Rm. 215. Supports C-64/128, Amiga. Write P.O. Box 146731, San Francisco, CA 94114-6731.

Diablo Valley CUG. Meetings: 2nd Thurs. 7:30 1331 Concord Ave. For info write: Box 27155, Concord, CA 94527. Or call (415) 932-2413.

F.U.N.H.U.G. - Fremont, Union City, Newark, Hayward User Group. Meetings: 3rd Thurs. 7:30 PM Newark Public Library, 6300 Civic Terrace Ave., Newark, CA. A user-organized, user-operated user group not affiliated with any computer or software manufacturer or distributor.

Fairfield Commodore User Group. Meetings: 1st & 3rd Mon. Solano County Education Bldg. Write to P.O. Box 2778, Fairfield, CA 94533-9998 for info.

Marin Commodore Users Group. Meetings: 2nd Wednesdays, Redwood High. Call: 883-7748; BBS 883-2558—300/1200.

Mother Lode Commodore Users Group. Meetings: 2nd & 3rd Thursdays, 7:00 PM, Calaveras County Water District Board Room. Supports the Commodore PET, VIC, 64, Plus/4 C-16 & 128. Call: Larry Anderson, 754-5530.

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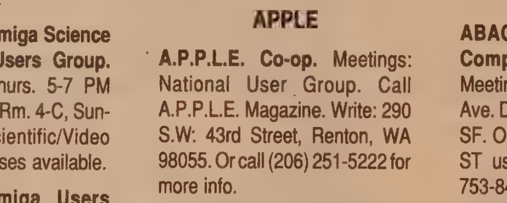

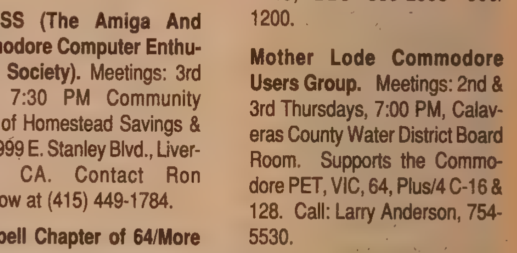

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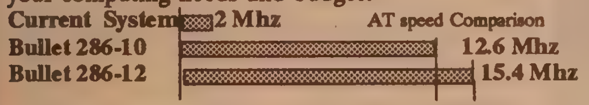

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Cache Ram	N	N	N	N	N	N	N	N	N
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Mem Config	512/640K/1M	512/640K/1M	512/640K/1M	512/640K/1/2/4M	512/640K/1/2/4M	512K/1M to 6M	512K to 8MB	1/2/4/6/8/10 MB	1/2/4/8/16/32MB
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PLUG (The Plus/4 Users Group). No regular meetings. Over 800 members internationally. Write to P.O. Box 1001, Monterey, CA 93942 for info.

San Jose Chapter of 64/More Commodore UG. Meetings: 1st. Sun. BBS (408) 946-6154.

Silicon Valley Commodore Club. Meetings: 4th Wed. 7 PM Hewlett-Packard, 5301 Stevens Creek at Lawrence & 280. C-64, C-128, & Amiga.

dBASE

dBASE Users Group of Marin & Northbay. Meetings: monthly, call (415) 488-0342 for info. Open membership, beginners through developers.

DATAEASE

Bay Area DataEase Users Group. Meetings alternate between San Francisco and Palo Alto. Contact Kermit Carter at (415) 945-7817 for info.

DESKTOP PUBLISHING

Bay Area Desktop Publishing User's Group. Meetings: Tues. 7-9 PM Norman's Restaurant, 2601 College Ave., Berkeley. For more info call Dr. C.J. Wallia at (415) 848-8200.

Desktop Publishing SIG/ GMUG. Meetings: 1st Tuesdays, 7 pm, San Francisco Business Times Building, 325 Fifth St., San Francisco. Call: 641-GMUG

Desktop Publishing SIG/ SFPCUG. Meetings: 4th Tuesdays, 7:30 pm, 179 Parnassus Ave., SF. Call: Phil Smith, (415) 566-3648.

First Publisher User Group. Members make up 8 1/2 x11 formats for newsletters & tip sheets. $35 annual membership. Contact Raul Ibanez (415) 550-0785.

PC Publishers Of Northern California. Meetings: 2nd Thursdays, 7 PM, 1415 Valencia St., San Francisco Newsletter, telephone hotline, reference library, education. Support Ventura, PC PageMaker, etc. Intro membership: $24/yr. Information: Al, (415) 661-9270 or Donna, (415) 826-6640.

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San Mateo Ventura Users' Group. Meetings: 2nd Mondays, 7:00-9:30 pm, 619 Bradford, Redwood City. Workshops, lectures, demonstrations of new techniques, shortcuts. Call: Eleanor Church, (415) 726-3181, or Pam Sheble, (415)574-2003.

Ventura Desktop Publishing Users Group. Meeting: 1st Tuesday, 7-9:00 pm, 1650 S. Amphlett Blvd., San Mateo. Newly formed group. Call Eleanor Church at (415) 726-3181, or Pam Sheble at (415) 574-2003 for information.

VPUG (Ventura Publisher User Group) Meetings: 3rd Mon. 6:30 pm Fort Mason, Bldg. A., Rm. 5 San Francisco, CA.

DYNABYTE

Dynabyte - Tahoe City Dynabyte Users Group. Swap, buy/sell - boards, parts, units. Write to Drawer 2629, Olympic Valley, CA 95730 for info.

EAGLE

Eagle Computer Users Group. Meetings: 2nd Sat. 9:00-12 noon Tandem Computer , 10435 N. Tantau Ave., Cupertino. Call: (408) 972-1965.

EASYTRIEVE

Easytrieve Plus Users Group. Next meeting: June 14, Hyatt Oakland. Call Debbie at Pansophic, (415) 573-7100. All users welcome.

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Epson Users of San Francisco Bay Area. Meetings: 1st Thurs. 7-10 PM Fort Mason, Bldg. C, Rm. 216, San Francisco, CA. For users of Epson (QX, Equity, PX-8). Presentations, support network, newsletter, public domain software.

FORTH

Forth Interest Group of Silicon Valley. Meetings: 4th Sat. 1 PM Oak Room, at Hewlett Packard, on Pruneridge in Cupertino. Call George Shaw at (415) 276-5953 for info.

Forth Interest Group, North Bay Chapter. Meetings: 2nd Sat. 1 to 5 PM South Berkeley Community Library, corner of Russell and Martin Luther King Junior Way. One block north of Ashby BART station. Contact George Shaw (415) 276-5953.

FOXBASE+

FoxBase+ User Group. PO 20607 Oakland, CA 94620. New group now forming. Call Rachel Cohen, (415) 465-3570.

GAVILAN

Gavilan User Group. Meetings: 2nd Thurs. 7 PM Lockheed Bldg. 162. Cal (408) 379-2774 for info.

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Bay Area Heath User Group (BAHUG). Meetings: 2nd Tuesdays, 7 pm, 2001 Middlefield Rd., Redwood City. Call: Ed Hayes, (415) 326-3311.

HYPERCARD

HyperCard SIG/GMUG. Meetings: 2nd Wednesdays, 7 pm, 78 A Mars St., San Francisco. Call: 641-GMUG.

HyperCard SIG/SEF. Foothill College. Call for dates and time: David Gewirtz, 345-4620.

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Berkeley PC/Compatible User Group. Meetings: 2nd Mondays, 7:00 pm, 2618 Telegraph Ave., Berkeley. No fee, bulletin board, public domain library. Call: Mel, (415) 526-4033.

C Language SIG/SFPCUG. Meetings: 2nd.Mondays, 7 pm, Kam's Rest.urant 2068 Center St., Berkeley. Call: Dan Baumbach, (415) 457-0729.

Clipper SIG/SFPCUG. Meetings: 4th Mondays, 7 pm, Rm. 1, Bldg. A, Fort Mason Center, SF. Call: Michael Palladino, (415) 751-2719.

Columbia SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Dennis Tye. (415) 566-0587.

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DataPerfect SIG/SFPCUG. Meetings: 2nd Mondays, 7 pm, Kam's Restaurant, 2068 Center St., Berkeley. Call: Christy Quinn (415) 644-1855.

dBASE SIG/SFPCUG. Meetings: 3rd Thursdays, 7:30 pm, 6 No. San Pedro Rd., San Rafael. Call: John Stephenson, (415) 488-0342.

Desktop Publishing SIG/ SFPCUG. Meetings: 4th Tuesdays, 7:30 pm, 179 Parnassus Ave., SF. Call: Phil Smith, (415) 566-3648.

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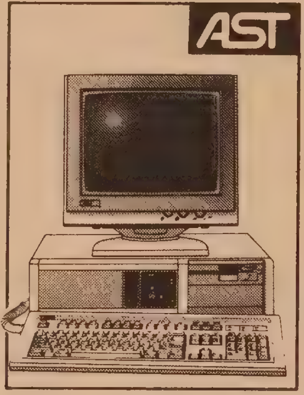

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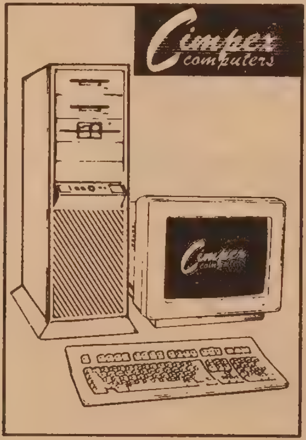

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Financial SW SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Rm. 1, Bldg. A, Fort Mason Center, SF. Call: Nick Maffei, (415) 668-2456.

FUNHUG—PC. Meetings: 3rd Wednesdays, 7:30 pm, Fremont Library, 39770 Paseo Padre Parkway, Fremont, in the Meeting Room. Mainly just the MS and PC DOS world. Send SASE to Russ Fischer, 2792 Arlington Place, Fremont 94555.

IBM & Compatibles Users Group (ICUG). Meetings: A mail-based user group with possible meetings. Not for PCjrs. $8/yr. Write: Dan Tuma, 30 Arjang Ct., Alamo, CA 94507-2041.

IBM Compatible Users Group. Meetings: monthly, call (415) 969-6916 for info 7-10 PM.

IBM PC & Compatibles Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $10/yr. Vincent Poy, c/o IBM PC & Compatibles User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

IBM PC Users' Group Of The Redwoods (PCUGR). Meetings: 2nd Thursdays, 7 pm, Santa Rosa Vets Memorial, East Dining Rm. Newsletter, BBS, public domain & shareware disk library, $25/yr. Call: (707) 527-USER.

IBM Technical SIG/SEF. Teknowledge. Call for dates and time. Call: Mike Schmit, 244-6826.

Kay+Fun Peninsula Computer Club. Meetings: 2nd Thursdays, 7:30 PM. Social Room, 222 Laurel St., San Carlos. CP/M + DOS library. BBS: (415) 572-8219.Call: 593-9981.

Lotus SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Jerry Stern, (415) 282-4100.

Marin-Sonoma PC Users Group (MSPCUG). Meetings: Last Tuesdays, Tamalpais Ave. & 3rd Ave., San Rafael ,Whistlestop Bldg. Call: (415) HAWK.

Mid-Peninsula IBM-Club. For IBM employees only. Call Scott Maiden for info: (415) 855-4509.

Modula-2 SIG/SFPCUG. Meetings: 3rd Thursdays, 7:30 pm, Call: Richard Lesnick, (415) 398-3587.

NewViews SIG/SFPCUG. Meetings: 4th Mondays, 7 pm, 179 Parnassus Ave., SF. Call: G. Watson, (415) 398-3587.

OtherPerfect SIG/SFPCUG. Meetings: 2nd Mondays, 7 pm, Kam's Restaurant, 2068 Center St., Berkeley. Call: Quisty Quinn, (415) 644-1855.

Paradox SIG/SFPCUG. Meetings: 4th Wednesdays. Call: Allen Greenkey. (415) 621-8478.

PC Clubhouse. Meetings: 1st Fridays, 8 pm, Cal State Hayward, Rm. 2078, Heiklejohn Hall. 2000 disk public library, expert help, software/hardware demos, $24/yr. Call: (415) 538-2449 or 846-3575.

PC UNIX SIG. Meetings: 1st Wednesdays, 7 pm, AT&T Training Center, 1090 E. Duane Ave., Sunnyvale. Learn more about such UNIX versions as Microport, XENIX and Minix. Starting a library of public domain source code. Call: Dan Kionka, (408) 432-1300.

Sacramento PC User Group. Meetings: For information call Jackie Janssen at (916) 383-6900.

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

San Francisco PC Users Group. Meetings: 3rd Mondays, 7:30 pm, Auditorium, UCSF, Laurel Heights, 3333 California St., SF. Call: (415) 221-9166. BBS: (415) 621-2609.

San Francisco PCjr Users Group (SFPCjrUG). Meetings: First Sundays. 7:30 PM, Homestead Savings, 22nd Ave./Geary, San Francisco. Demonstrations and discussions, club library, disks for sale. Call: John King, 472-7035

Santa Cruz Computer Society. Meetings: 3rd Thursdays. 7 PM, Santa Cruz County Office of Education, 809 Bay Avenue, Suite H, Capitola. Call: 479-1180.

Silicon Valley Computer Society. Meetings: 4th Wed. 7:30 PM Oak Room, at Hewlett Packard, on Pruneridge in Cupertino. Call Kent Stafford for info at (408) 286-2969.

Silicon Valley FOG. Meetings: 3rd. Wed. 7:30 PM Saratoga Community Library, 13650 Saratoga Ave.

Solano Community PC Users Group. Meetings: 3rd Monday, 7 PM, Fairfield High School.

Solomon User Group Of Silicon Valley. Meetings: Wednesday, August 10, 6:30 PM, Conveyor And Storage Dynamics, 2581 Leghorn St., Mt. View. Call Grihalva Associates, 39899 Balentine Dr., Suite 175, Newark, CA 94560; (415) 659-1515.

South Bay AT&T PC UG. Meetings: Call for info. Call (408) 226-0116.

South Bay WordPerfect User Group. Meetings: Monthly, 13650 Saratoga Ave., Saratoga. Call: Martin Van Derpool, (408) 238-8434.

South County PC Users Group. Meetings: Round Table Pizza Restaurant, 22457 Foothill Blvd., Hayward. Call: R.A.McCloud, (415) 537-9899.

Teachers SIG/SFPCUG. Meetings: 3rd Mondays, 7:30 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Margaret Gwathmey, (415) 982-4221.

TRS Nybblers. Meetings: 2nd Friday, 8 PM, Chabot College, 2555 Hesperian Blvd., Rm. 600, Hayward. MS/DOS, CP/M, laptops, CoCo's, Mod 1, 3, 4; Mod 2, 12, 16, 6000. PD software education modules, problem solving committee.

Valley Computer Club IBM PC Users Group. Meetings: 3rd Wed. 6 PM Xerox Bldg. 475 Oakmead Pky, Sunnyvale, CA. $24/yr member. Monthly VPUG News, access rights to VPUG-SIG Advice on desktop pub. techniques, new products, bugs, etc.

WordPerfect SIG/SFPCUG. Meetings: 3rd Mondays, 7 pm, Chancellor's Conf. Rm., UCSF, 3333 California St., SF. Call: Debbie Foster, (415) 285-4534.

INMAGIC

San Francisco INMAGIC User Group. INMAGIC Meetings: Monthly. Call for dates and times. Call: Dana C. Ellingen, 423-4582.

KAYPRO

BAKUP. Meetings: 3rd Tuesdays, 7:30 pm, Albany Senior Center, 846 Masonic Ave., Albany. Call: Bob Athey, (415) 526-3541.

Kay+Fun Peninsula Computer Club. Meetings: 7:30 PM, Social Room, 222 Laurel St., San Carlos. CP/M + DOS library. BBS: (415) 572-8219. Call: 593-9981.

San Francisco Computer Society. Meetings: 1st Monday, 7:00 PM, Homestead S&L, 5757 Geary Blvd., San Francisco CP\M and DOS machines. No BBS. Call Ralph Gallagher, (415) 929-0252 for information.

MACINTOSH

A32, The Association Of Apple 32 Users. Meetings: 2nd Saturdays, GTE cafeteria, Mountain View. Membership includes monthly meetings, access to Disk of the Month, full BBS priviledges, the ICON newsletter, SIGs, discounts, and much more. Call: 263-0398.

APX, Inc. Macintosh. A national intercorporate computer users information service with several communications channels including an electronic forum on MacNet, newsletters, and local and national meetings and special panels. Several local chapters exist, you can start one too. Call: (408)745-0665, or write to: Mike Bailey, APX, 370 Altair, PO 175, Sunnyvale, CA 94086.

Bay Area MacForum. Meetings: 3rd Saturdays, noon, Daly City Library, 40 Wembeley. BBS, SIGS, PD/SW library, Help List, Newsletter, Newcomers Meeting, more. Call: (415) 771-5830/398-2335.

Berkeley Macintosh User Group (BMUG). Meetings: ev-

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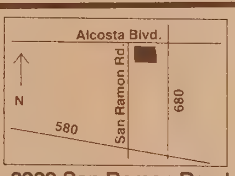

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Christian Macintosh User Group, San Francisco Chapter. Meetings: 2nd Thurs. San Francisco. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913. Bible Study and DTP SIGS.

Christian Macintosh User Group, Silicon Valley Chapter. Meetings: 1st Thurs. San Jose. Newsletter and support available. Contact Rick Thrasher at (408) 437-1913.

Desktop Publishing SIG/GMUG. Meetings: 1st Tuesdays, 7 pm, San Francisco Business Times Building, 325 Fifth St., San Francisco. Call: 641-GMUG.

Diablo Valley Apple Users. Meetings: 1st & 3rd Fri. 7 PM Willow Creek Ctr., 1026 Mohr Lane, Concord, CA. SIG's meet monthly. Featuring library of pub. domain software & club's DOM's. Newsletter, demos, group buys hard/software.

EBMUG (East Bay Macintosh Users Group). Meetings: 3rd Tuesdays, 7:30 pm, 724 Allston Way (@4th) near University Ave., Berkeley. Members receive free PD software. Bring blank disk. Meetings open to everyone. Call: Terry Pennington, (415) 486-0147.

GMUG (San Francisco's Macintosh User Group for Gays and Lesbians). Meetings: 3rd Wednesdays, 7 pm, UC-Berkeley Extension Annex, 1930 Market St., Rm., #2G. Call: 641-GMUG.

HyperCard SIG/GMUG. Meetings: 7 pm, 78 A Mars St., San Francisco. Call: 641-GMUG.

Mac Diablo Users Group (MDUG). Meetings: 3rd Tues., Community Room, Glendale Federal Savings, 3101 Crow Canyon Road, San Ramon.

MacCruisers — Santa Cruz. Meetings: 2nd Wed. Jade Street Community Ctr. at 45th Ave., Capitola, CA.

Macintosh SIG/SEF. Apple Cafeteria. Call for dates and time. Tony Meadow, 644-9400.

Macintosh Users Of ComputerWare (MUCoW). Meetings: 2nd & 4th Wednesdays, 7:00 pm, Above ComputerWare store, 490 California Ave., Palo Alto. Call: (415) 496-1051 or 496-1033.

MacNexus — Sacramento's Macintosh Users Group. Meetings: 3rd Thurs. 6:30 PM Call (916) 446-2411 for info. 350 members, but still informal. Extensive public domain collection.

Macs Of Marin (MOM). Meetings: 2nd Thursdays, 7 pm, Redwood High School, 395 Doherty, Larkspur. Call: Steve Salzman, 459-5707.

Silicon Valley Computer Society's Macintosh SIG. First meeting: September 21, 7:30 pm, 6th floor offices of Arthur Young and Co., Mitsubishi/Plaza Bank Building, 55 Almaden Blvd., San Jose. A forum for shared ideas. First meeting will be a demonstration of HyperCard. Other demos are planned for future meetings. Call: Dennis Dawson, (408) 947-5550.

Stanford Macintosh Users' Group (SMUG). Stanford community membership: $25; public membership: $35 per year. Call: 723-SMUG. BBS: (415) 723-7685.

TI-West Meetings: 2nd Fri. 8 PM Chabot College, Rm. 600, 25555 Hesperian Blvd., Hayward, CA. Access to a variety of pub. domain software, education modules "problem solving" peripheral committee.

Tri-Valley Macintosh User's Group (TMUG). Meetings: 1st Thursdays, 7 pm, 4695 Chabot Dr., Rm 114, Hacienda Business Park, Pleasanton. Newsletter, large P/D library. Call: James (415) 426-8756 eves, Mike, (415) 838-6165.

MICROSOFT

Mac Diablo Users Group (MDUG). Meetings: 3rd Tuesday, 7:30 PM, Community Room, Glendale Federal Savings, 3101 E. Crow Canyon Rd., San Ramon. Small, helpful group.

Microsoft Flight Simulator Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $15/yr. Vincent Poy, c/o Microsoft Flight Simulator User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

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Microsoft Word Users Group. Meetings: 4th Mondays, 7:30 PM - 9:30 PM, Hewlett Packard-Cupertino-Oak Room Bldg., 48 Pruneridge, 100 yds. east of Wolfe off Hwy 280. August 22: Chris Donner, Pres. Access Softek on DRAGNET for Text Retrieval and Management. Call: Bill West, 356-8805.

Mirosoft Word SIG of the SVCS. Meetings: 4th Mon. 7:30 PM Hewlett—Packard, Oak Room, Pruneridge at Wolfe, Cupertino. Contact Bill West (408) 356-8805 or Hunter Jackson (4080 446- 4097.

MINDSET

San Francisco Mindset Users Group. Call: (415) 626-4240.

MORROW

BAMDUA (Bay Area Micro Decision Users Assoc.). Meetings: 3rd Tues. 7:30 PM Albany Senior Center,846 Masonic Street (just north of Solano) in Albany, CA. Voice:(415) 534-4257. BBS:(415) 654-3882. P.O. Box 5152 Berkeley CA 94705.

San Francisco Computer Society. Meetings: 1st Mon. 7:00 PM. Homestead S&L, 5757 Geary Blvd., San Francisco. MS-DOS machines, Osborne, Kaypro, Morrow. Call Ralph Gallagher 929-0252.

NEC

Bay Area NEC/100 Users Group. Meetings: 2nd and 4th Wednesdays. Locations vary. For those interested in laptops, especially Kyocera 80C85 type (NEC 8201a, Radio Shack Model 100 or 102. Call (415) 658-1889.

NOVELL

Novell Users Group. Meetings: Third Wednesdays, 6:30 pm, Coco's restaurant, 1305 South Mary, Sunnyvale. Newsletter, bulletin board, product demos, assistance for beginners. Call: Bill Strouse, (408) 453-3321 days; modem, 24 hrs: (408) 453-3326.

ORACLE

Northern California Oracle UG. Meetings:. Call (408) 738- 8330 for info. Meets every 3 months at different Bay Area locations. Newsletter published between meetings.

OSBORNE

San Francisco Computer Society. Meetings: 1st Monday, 7:00 PM, Homestead S&L, 5757 Geary Blvd., San Francisco. CP\M and DOS machines. No BBS. Call Ralph Gallagher, (415) 929-0252 for information.

PARADOX

San Francisco Paradox Users Group. Meetings: 3rd Wednesday, call Jeffrey Edwards Co. for information, (415) 543-6227.

San Francisco Paradox Users Group, South Bay Chapter. Meetings: 3rd Tuesday, call Jeffrey Edwards Co. for information, (415) 543-6227.

TANDY/RADIO SHACK

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Tandy 1000 (The Mug). Mail-based user group w/ monthly newsletter. Not for PC jrs. Members communicate through newsletter. $8/yr. fee; checks to: Daniel Tuma, 30 Arjang Ct., Alamo, CA 94507-2041.

Tandy 1000, 3000, 4000, And 5000 Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $10/yr. Vincent Poy, c/o Tandy 1000, 3000, 4000, And 5000 User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

TRS Nybblers. Meetings: 2nd Fri. 8 PM Chabot College, 25555 Hesperian Blvd., Hayward. MS-DOS, CP/M, laptops, Mod 1, 3, 4, Mod 2, 12, 16, 6000. Bud Gallagher (415) 522-5960 or Bruce Jarvis (415) 846-3575.

R:BASE

East Bay User Group. Meetings: Last Thursday of each month. For location and time, Call: Scott Longwell, 848-2080.

Northern California User Group. Meetings: Every 3 months. For schedule, Call: Ken Lebeiko, 881-2652.

R:BASE User Group Of The Redwoods. Meetings: Third Wednesdays, 3 pm, Sonoma/Marin County rotating meeting places. Call: Jim Ray, (707)886-5315.

San Jose User Group. Meetings: First Wednesdays. For location and time, Call: Hanna Varniz, 984-8484.

REVELATION

Bay Area Revelation UG. Meetings: 1st Tues. Call (415) 759-1210.

SANYO

Sanyo PC Hackers. Meetings: 1st Wed. 7 PM Mercury Room, Mercury Savings & Loan, 99 El Camino Real, Menlo Park.

SOLOMON

San Francisco Solomon III Users Group. Meetings: last Wed.,odd months 6-9 PM Price Waterhouse, 555 California St. 36th Fl., San Francisco. Annual membership - $50; corp. membership - $75.

Solomon User Group of Silicon Valley. Meetings: For info contact Grihalva Associates, 39899 Balentine Dr., Suite 175, Newark CA 94560.

SUN

Sun User Group. Call: (415)336-4343.

S—100

S—100 Business Users Group. Meetings: 4th Tues. 7:30 PM Santa Clara Univ., Rm. 101, Bannan Engineering Bldg. CP/M & MS-DOS libraries. BBS: (408) 262-5150, 8-N-1,2400/1200/300.

TELEBIT

Telebit Trailblazer Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $16/yr. Vincent Poy, c/o Telebit Trailblazer, And 5000 User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

TEXAS INSTRUMENTS

Bay Cities User Group. Meetings: 1st, 3rd, 5th Wednesdays, 7:30 pm, 1637 Morgan, Mt. View. Call: Jack, (415) 964-4344.

Brea 99'ers Users Group. Meetings: 1st Mon. 7:30 PM Mercury Savings, La Habra, CA.

San Francisco 99ers. Meetings: 3rd Saturdays, 3751 Elston Ave. Call: Fred, (415) 530-8335.

Thousand Oaks Personal Computer Club (TOPCC). Meetings: monthly. Call: (714) 686-0336.

TIMEX/SINCLAIR

Timex Sinclair East Bay Z80 Users Group (TSEBZUG). Russ English, (415)465-3116.

Timex Sinclair Peninsula Users Group (TSPUG). Contact George Mockridge, (408) 878-1773.

Timex/Sinclair Users of Silicon Valley (GUTS/SV). Meetings: each Sat. 9 AM Stanford Univ., Jordan Hall (quadrangle), Math Bldg. RM 380C. SW library & newsletter. For topic check PDSE BBS in Sunnyvale (408) 735-7390, 300/1200, 8-N-1, 24 hrs.

UNIFY

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UNIX

SVNet. UNIX User Group. UNIX Meetings: 3rd Tuesdays, 10500 DeAnza, Cupertino. Talks on UNIX topics, books, and reviews. Call: Ralph Barker, (408) 248-8649.

VENTURA PUBLISHER

San Francisco Ventura Publisher Users Group. A mail-based user group with monthly newsletter. Members communicate through newsletter. $20/yr. Vincent Poy, c/o San Francisco Ventura Publisher User Group, 895 Pacific Ave. Suite #638, San Francisco, CA 94133-4340.

San Mateo Ventura Users' Group. Meetings: 2nd Mondays, 7:00-9:30 pm, 619 Bradford, Redwood City. Workshops, lectures, demonstrations of new techniques, shortcuts. Call: Eleanor Church, (415) 726-3181.

Ventura Desktop Publishing Users Group. Meeting: 1st Tuesday, 7-9:00 pm, 1650 S. Amphlett Blvd., San Mateo. Newly formed group. Call Eleanor Church at (415) 726-3181, or Pam Sheble at (415) 574-2003 for information.

VPUG (Ventura Publisher User Group) Meetings: 3rd Mon. 6:30 pm Fort Mason, Bldg. A., Rm. 5 San Francisco, CA

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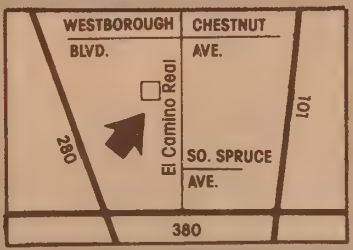

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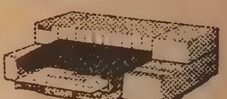

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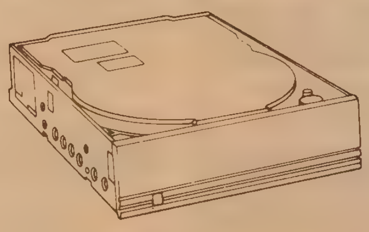

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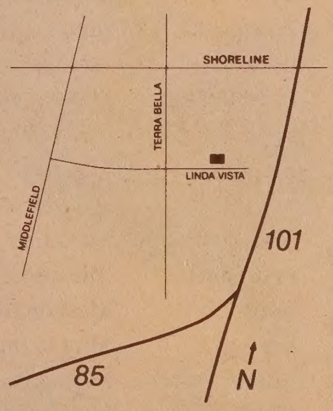

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Ideas	Bring	Money
Insidious	Byzantine	Mentality
Intergalactic	Bottomline	Mistake
Inevitably	Bad	Marketing
Indecision	Breeds	Mistakes
Inshallah	Burak	Ma'lesh
Imensa	Bola De	Manteca
Iconoclastic	Bilateral	Monopoly
Incontinent	Bandolerismo	Moloch
Imperial	Bellicose	Marauder
Impious	Bacchanalian	Metropolis
I'd	Buy	Macintosh
Imbecilic	Bad	Micros
Imperialism	By	Marketing
Intensely	Boring	Machines
Interesting	But	Mundane
Internals	By	Mediocrity
Into	Building	Money
Industry's	Bungling	Monolith
Irresponsibly	Behaved	Multinational
Increasingly	Bad	Manufacturing
Insipidly	Bankrolling	Millions
Inconsistent	Business	Machines
Innovation	By	Management
Industry	Bowel	Movement
I'm	Being	Manipulated
International	Brotherhood	Magicians
Intercourse	Beats	Masturbation
Incredibly	Bloody	Minded
Incredibly	Ballsey	Marketeers
Intentionally	Braindamaged	Machinery
Idealistically	Backward	Microcomputers
Idle	Brain	Malfunction
Imitable	Boring	Microcomputers
Impeccably	Blue-dressed	Managers
Itty	Bitty	Machines
International	Bowel	Movement
I	Bring	Manuals
I've	Been	Misled
Ifs	Buts	Maybes
It's	Better	'morrow
Incompatible	Blue	Machines
Indigestion	Bothers	Me
Intersmashable	Byte	Manipulators

Icons	Bygones	My Mom's
It	Breaks	Monthly
Infinitely	Baffling	Motives
I'm	Buying	Macintosh
It's	Better	Manually
Imitation	Burroughs	Machine
Incredibly	Big	Monster
Itty	Bitty	Mentality
Incredible	Bowel	Movement
I've	Been	Mesmerized
Insignificant	Bothersome	Machines
Its	Broke	Ma'am
In	Business(for)	Money
International	Bit	Mangler
Increasingly	Banal	Management
Infernal	Blue	Machine
Insultingly	Boring	Microcomputers
Ill-mannered	Besotted	Macrocosm
Immeasurable	Bigheaded	Malapert
Impersonal	Bellicose	Magnate
Insolent	Bickering	Mal-der-mer
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I've	Been	Mangled
Inherently	By	Microsoft
Incredibly	Bad	Manuals
I'll	Buy	Macintosh
It's	Beyond	Monolithic
Install	Bigger	Memory
Infernal	Biggest	Mistake
Incredibly	Broad	Monopoly
Intriguingly	Blue	Motif
Incredibly	Bad	Merchandising
It's	Bugging	Me
Itty	Bitty	Mouse
I	Bring	Madness
Incredibly	Big	Manufacturer
Industry's	Biggest	Mistake
I	Built	Mine
I	Broke	Mine
Idiots	Being	Mental
I've	Been	Mauled
Invented	By	Maladroits
Invented	By	Marketing
Insulting	Boorish	Manner

Inane	Brutish	Merchandising
Infinite	Budget	Merchandising
It's	Bullshit	Mummery
It's	Become	Monolithic
Inadequates	Becoming	Millionaires
I'd	Be	Misinforming
Idiots	Became	Managers
Incredibly	Boring	Manuals
Incredibly	Belligerent	Marketing
Interesting	But	Mediocre
Invented	By	Murphy
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Illustrious	Busy	Mice
Itty	Bitty	Maharishi
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Ill-manners	Being	Mandatory
It	Broke	Me
Illustrious	Bankruptcy	Malefactor
Insensitivity	Begets	Mediocrity
I've	Become	Magnanimous
I	Blame	Mathematics
Internal	Byte	Malfunction
Intellectually	Blessed	Marketers
Instant	Black	Market
IBMers	Bug	Me
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Indisposed,	Back	Monday
I	Believe(in)	Money
Industry	Bully	Magnifique
Incredibly	Boring	Machines
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Innovation?	Bah!!	Marketing!
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Industry's	Being	Megamarketed
International	Business	Machines
Imitation	Burroughs	Machines
Improved	Burroughs	Machinery
Inferior	Business	Machines
Immensely	Bland	Mercenaries
Imprudent	Boorish	Mob
Imperfect	Bombastic	Moneymakers
Infamous	Bizarre	Monsters
Inhuman	Babbling	Madmen
Ignorant	Baffling	Majority
Illusive	Bewildering	Mystics
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Imperishable	Brutal	Manure
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Itsy	Bitsy	Monopoly
Intentionally	Been	Manipulated
I	Buy	More

John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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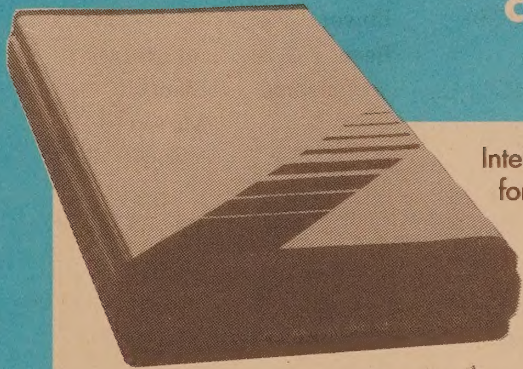

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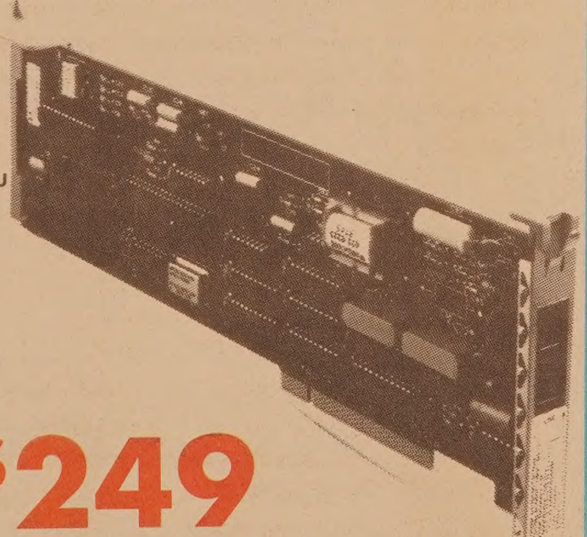

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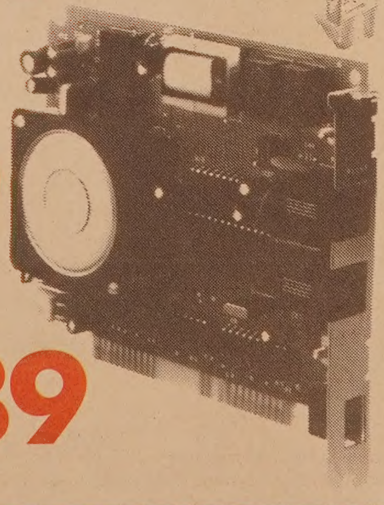

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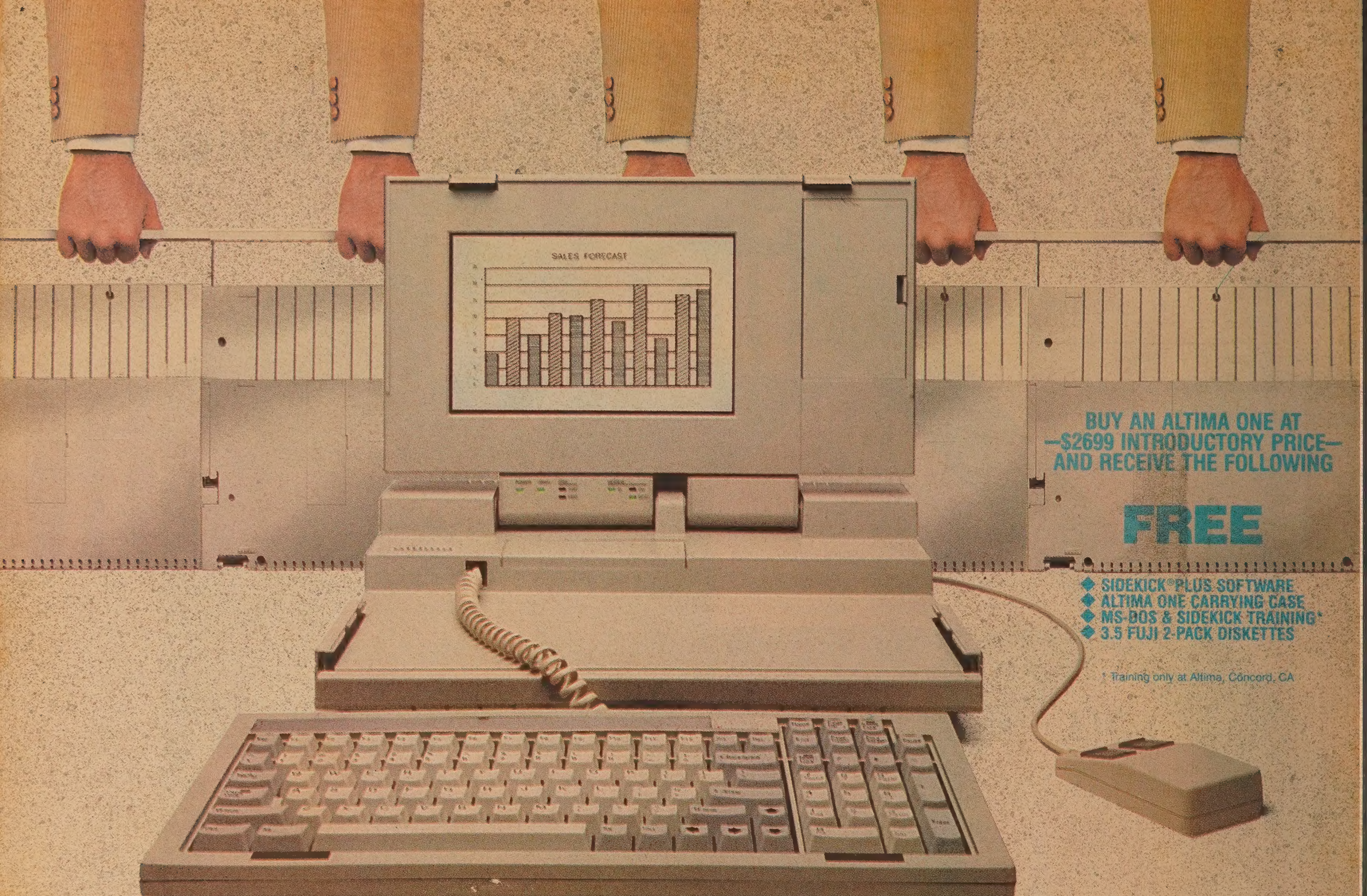

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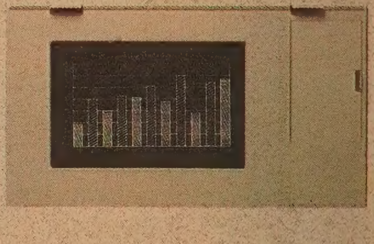
Compatible with IBM PC AT, Altima can run MS-DOS and OS/2 with ease. And when it comes to speed, everything else takes a back seat. The sophisticated 80286 microprocessor revs Altima One to a full 16 MHz. Plus this laptop/desktop is user expandable, with a PC-compatible expansion slot and memory that can stretch from one megabyte all the way to five.

Now that's what you call memory. But we call it only the beginning. Consider the fact that just about everyone else's options are standard with Altima. Like the built-in 2400 baud modem. Or the full function 101-key keyboard with numeric keypad. Even an opto-mechanical mouse comes with the Altima One. Other features include a 3½", 1.44 megabyte floppy disk drive; a 20 megabyte hard disk; parallel and serial ports; a switchable white on black LCD display; and more.



Whether you're at the office, on the road or working comfortably at home, Altima is the computer that'll do what you need…when you need it.

Altima. The power will probably surprise you. But not as much as the price.

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